A Multi-Commodity Partial Equilibrium Model of Imperfect Competition in Future Global Hydrogen Markets

Supplementary Material
Data Assumptions

Lukas Barner

German Institute for Economic Research
Energy, Transportation, Environment Department
Mohrenstraße 58, 10117 Berlin, Germany
✉: lbarner@diw.de

Technische Universität Berlin
Workgroup for Economic and Infrastructure Policy (WIP)
Straße des 17. Juni 135 (Sekr H33), 10623 Berlin, Germany
✉: lb@wip.tu-berlin.de

Contents

1 Case Study Data **1**

1.1 Objective . . . 1

1.2 Parametrization of Model Sets . . . 1

1.2.1 Geographical Relations . . . 1

1.2.2 Parametrization of Technical Relations . . . 2

1.2.3 Temporal Relations . . . 6

1.3 General Parameters . . . 7

1.3.1 Scaling of Investment Cost . . . 7

1.3.2 Temporal Preferences . . . 7

1.3.3 Weights of Time Steps . . . 7

1.4 Input Parameters . . . 7

1.4.1 Renewable Potential Analysis . . . 7

1.4.2 Availability Factors . . . 9

1.4.3 Capacity Expansion Cost . . . 9

1.4.4 Input Operational Cost Functions . . . 10

1.4.5 Exogenous Input Capacities . . . 10

1.4.6 Capacity Expansion Limits . . . 10

1.4.7 Lifetimes . . . 10

1.5 Production Parameters . . . 11

1.5.1 General Remarks . . . 11

1.5.2 Production Cost . . . 11

1.5.3 Exogenous Production Capacities . . . 11

1.5.4 Production Capacity Expansion Limits . . . 11

1.5.5 Production Capacity Expansion Cost . . . 11

1.5.6 Production Technology Lifetimes . . . 12

1.5.7 Production Factor Intensity . . . 12

1.6 Trade Parameters . . . 12

1.6.1 Exertion of Market Power . . . 12

1.6.2 Sanctions on Sales . . . 12

1.7 Conversion Parameters . . . 12

1.7.1 Exogenous Conversion Capacities . . . 12

1.7.2 Technology Lifetimes . . . 12

1.7.3 Conversion Factor Intensities . . . 13

1.7.4 Operational Costs . . . 13

1.7.5 Costs of Capacity Expansion . . . 14

1.7.6 Costs of Repurposing . . . 14

1.7.7 Repurposing Factor . . . 14
1.8 Transport Parameters . . . 14
1.8.1 General Remarks . . . 14
1.8.2 Technology Lifetimes . . . 14
1.8.3 Operational Costs . . . 15
1.8.4 Capacity Expansion Costs . . . 15
1.8.5 Exogenous Capacities . . . 15
1.8.6 Losses . . . 15
1.8.7 Capacity Repurposing Costs . . . 16
1.8.8 Repurposing Factor . . . 16
1.9 Storage Parameters . . . 16
1.9.1 Exogenous Capacities . . . 16
1.9.2 Injection Costs . . . 16
1.9.3 Extraction Costs . . . 16
1.9.4 Capacity Expansion Costs . . . 16
1.9.5 Losses . . . 17
1.9.6 Technology Lifetimes . . . 17
1.9.7 Capacitiy Expansion Limits . . . 17
1.9.8 Repurposing Costs . . . 17
1.9.9 Repurposing Factor . . . 17
1.10 Final Demand Parameters . . . 17
1.10.1 Inverse Demand Functions . . . 17
1.10.2 Reference Quantities . . . 18
1.10.3 Reference Prices . . . 19
1.10.4 Reference Elasticities . . . 19

2 Detailed Geographical Relationships 20
2.1 Tabular Nodal Assignment . . . 20
2.2 Geographical Reference Points for Distance Calculations . . . 30
2.3 Calculated Pipeline and Shipping Distances . . . 32
2.4 Adjacency Structures for Pipeline and Shipping . . . 32

3 Renewable Potential Analysis 37
3.1 Renewable Hydrogen Capacity and Cost Assumptions . . . 37
3.1.1 Renewable Investment Base Cost . . . 37
3.1.2 Renewable Hydrogen Capacity and Cost Assumptions . . . 38
3.2 Availability Factors . . . 131

4 Nuclear Cost Assumptions **184**
4.1 Investment Cost 184
4.2 Operation and Maintenance Cost 184

References **187**

List of Figures

1 Overview of Model Nodes 1
2 Annual Reference Demand for Hydrogen 19
3 Annual Reference Demand for Ammonia 19

List of Tables

1 Overview of Commodities and Transport Options . . . 3
2 Overview of Inputs . . . 3
3 Overview of Production Technology and Origins . . . 4
4 Overview of Input Blocks . . . 4
5 Overview of Average Wind Speeds in Blocks . . . 5
6 Overview of Average Solar Photovoltaic (PV) Capacity Factors in Blocks . . . 5
7 Overview of Potential Conversions . . . 6
8 Input Lifetimes . . . 10
9 Production Factor Intensity . . . 12
10 Overview of Conversion Technology Lifetimes . . . 13
11 Overview of Conversion Technology Factor Intensities . . . 13
12 Overview of Conversion Technology Operational Cost . . . 13
13 Overview of Conversion Technology Investment Cost . . . 14
14 Overview of Transportation Technology Lifetimes . . . 14
15 Overview of Transportation Cost . . . 15
16 Overview of Transportation Cost . . . 15
17 Overview of Transportation Technology Losses . . . 16
18 Overview of Storage Expansion Costs . . . 16
19 Detailed Assignment of Model Nodes . . . 20
20 Overview of Harbor Reference Points . . . 31
21 Overview of Shipping Distances . . . 33
22 Overview of Pipeline Distances . . . 34
23 Overview of Shipping Adjacency Structures . . . 35
24 Overview of Pipeline Adjacency Structures . . . 36
25 Renewable Base Invest Cost Assumptions . . . 37
26 Renewable Hydrogen Capacity and Cost Assumptions . . . 38
27 Renewable Hydrogen Availability Assumptions . . . 131
28 Overview of Nuclear Hydrogen Investment Cost . . . 185
29 Overview of Nuclear Hydrogen Operational Cost . . . 186

List of Listings

List of Acronyms

ASU . . . . . Air Seperation Unit

CAPEX . . . . . Capital Expenditure

CCTS . . . . . Carbon Capture, Transport and Storage

CH_3OH . . . . . Methanol

CNG . . . . . Compressed Natural Gas

COP . . . . . Conference of the Parties

ECMWF . . . . . European Centre for Medium-Range Weather Forecasts

ERA5 . . . . . ECMWF Reanalysis v5

GADM . . . . . Database of Global Administrative Areas

GH_2 . . . . . Gaseous Hydrogen

GH_2T-MOD . . . . . Global Hydrogen Trade Model

GIS . . . . . Geographic Information System

H_2 . . . . . Hydrogen

LCOT . . . . . Levelized Cost of Transportation

LH_2 . . . . . Liquefied Hydrogen

LNG . . . . . Liquefied Natural Gas

LNGS . . . . . Liquefied Natural Gas Storage

NH_3 . . . . . Ammonia

NPP . . . . . Nuclear Power Plant

NZE . . . . . International Energy Agency Net Zero Emissions by 2050 Scenario

OECD . . . . . Organization for Economic Cooperation and Development

OM . . . . . Operation and Maintenance

PV . . . . . Photovoltaic

RES . . . . . Renewable Energy Sources

SSO . . . . . Storage System Operator

UGS . . . . . Underground Gas Storage

1 Case Study Data

1.1 Objective

This online supplement aims to provide a transparent overview of all assumptions made throughout the paper.

1.2 Parametrization of Model Sets

1.2.1 Geographical Relations

Nodes Figure 1 provides a visual representation of the 26 model regions, while Table 19 gives a detailed overview of regional allocation. Antarctica and Greenland are excluded from the analysis. All subsequent plots and geospatial allocations are based on data specified by the World Bank,[1] appended by some cartographic data for Antarctica[2]. A mapping to the corresponding Database of Global Administrative Areas (GADM) Admin0 level is also presented in Table 19.

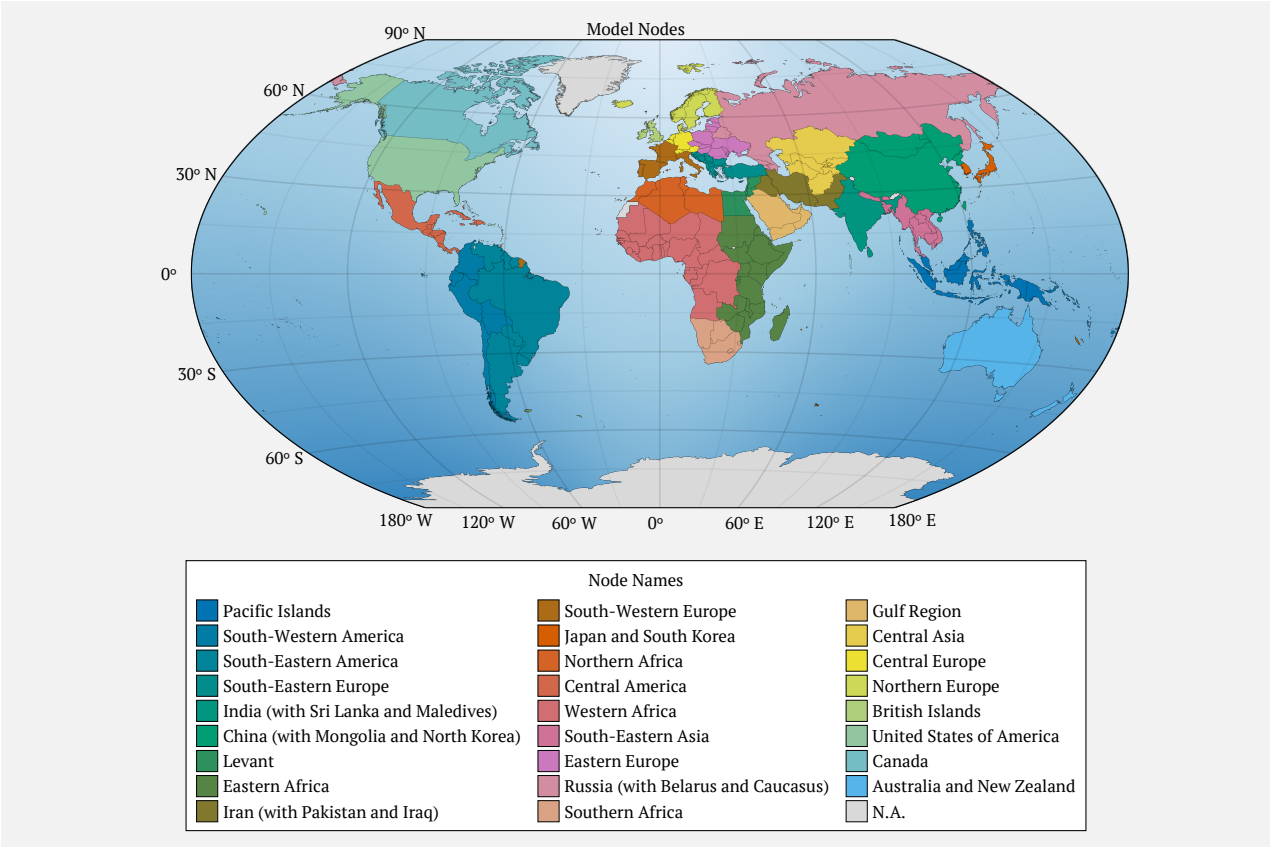


Figure 1: Overview of Model Nodes

Source: Own depiction.

[1] See https://datacatalogfiles.worldbank.org/ddh-published/0038272/DR0046666/wb_boundaries_geojson_highres.zip?versionId=2023-01-19T09:29:18.1778038Z.

[2] See https://data.humdata.org/dataset/geoboundaries-admin-boundaries-for-antarctica?.

Producers Every model region from Section 1.2.1 has a single domestic producer. All producers are locally acting agents that cannot sell to traders other than the domestic one.

Converters Every model region from Section 1.2.1 has a single domestic converter. All converters are locally acting agents, however, they can offer services to traders other than the domestic ones. No discrimination of foreign traders is assumed in this context.

Storage System Operators Every model region from Section 1.2.1 has a single domestic Storage System Operator (SSO). All SSOs are only locally acting agents, however, they can offer services to traders other than the domestic ones. No discrimination of foreign traders is assumed in this context.

Traders Every model region from Section 1.2.1 has a single domestic trader that can exert market power in different final consumption markets. In a perfectly competitive scenario, no exertion of market power is assumed. In the strategic scenario, exertion of market power is only assumed in non-domestic markets. This corresponds to the observation that domestic prices in strategic fossil fuel exporting countries are not elevated.

Arcs Model regions can be connected by two types of arcs: Either, a line-like connection is assumed (e.g. via pipeline), or a seaborn connection must be established (e.g. a shipping route). Precise modalities of transport depend upon commodity characteristics, for more details the reader may refer to Section 1.2.2. For distance calculations, all production, harboring infrastructure, demand, conversion and storage are assumed to be focused in a single representative point. Naturally, this represents an abstraction from reality, especially with only 26 model nodes. All nodes are assumed to be located close to existing Liquefied Natural Gas (LNG) infrastructure, where applicable. Otherwise, large ports are chosen. Table 20 gives an overview of geographical coordinates and references the respective (potentially) existing terminals. Shipping distances are calculated using the python package "scgraph",[3] while approximated pipeline distances are calculated with distances from "geopy"[4] at a 15 % surplus to the shortest possible option. Tables 21 and 22 depict the resulting distances. Pairs with the same origin and destination are excluded by the adjacency structures given in Section 1.2.2, however, the corresponding arc distance is set to 40 000 km (roughly the earth's circumference). In addition, Section 1.2.2 restricts routes that are implausible.

1.2.2 Parametrization of Technical Relations

Commodities Modeled commodities include Ammonia (NH_3), Gaseous Hydrogen (GH_2) and Liquefied Hydrogen (LH_2). Additional commodities can be added in a modular fashion for future research. This may include Compressed Natural Gas (CNG), LNG or Methanol (CH_3OH). Table 1 depicts the

[3] See https://github.com/connor-makowski/scgraph.
[4] See https://github.com/geopy/geopy.

forms in which commodity flows are allowed within the model. Corresponding distances can be found in Tables 21 and 22, while adjacency structures are available in Tables 23 and 24. In reality, ammonia may also flow via pipeline, however, differences in transportation costs are relatively small. In comparison to cost uncertainty for conversion, only considering seaborne transportation should not constitute an illegitimate abstraction.

Table 1: Overview of Commodities and Transport Options

Commodity	**Pipeline**	**Shipping**
LH_2	✗	✓
GH_2	✓	✗
NH_3	✗	✓

Source: Own depiction.

Inputs Inputs of Global Hydrogen Trade Model (GH_2T-MOD) include hydrogen produced with excess electricity from Renewable Energy Sources (RES) and Nuclear Power Plants (NPPs) (see Table 2). With a higher temporal resolution, a more precise approach would be to use electricity from both sources as an input and have electrolysis modeled as a production or conversion technology. In this case, electricity demand would also be included, giving the model more of an energy systems approach. All of this is possible without any code modifications, only data sets would need to be altered.

Table 2: Overview of Inputs

Input
Hydrogen produced with excess electricity from RES
Hydrogen produced with excess electricity from NPPs

Source: Own depiction.

Production Technologies Utilized production technologies are "Renewable Electrolysis" and "Nuclear Electrolysis", where both are simply utilized as a vessel to account for origin of production. Inclusion of "Natural Gas Extraction" and "Steam Methane Reformation with Carbon Capture, Transport and Storage (CCTS)" would be a natural extension of the model.

Table 3: Overview of Production Technology and Origins

Input
Renewable Electrolysis
Nuclear Electrolysis

Source: Own depiction.

Origins Origins are strongly related to the production technologies from Section 1.2.2, and amount to "Renewable Electrolysis" and "Nuclear Electrolysis".

Input Blocks In total, there are 32 input Blocks. Table 4 provides an overview, where 15 Blocks are related to solar PV, and 15 more are included for wind power generation. Wind and solar PV names "Plant A/B" refer to locations closer/further from existing grid infrastructures, while the tags "Offshore" and "Rooftop" are self-explanatory. Blocks 1–5 relate to different average wind speeds and solar PV capacity factors. Tables 5 and 6 present an overview of the respective groupings, which are based on own calculations with the `GlobalEnergyGIS` package (Mattsson et al. 2021). In addition, one hydropower and NPP block exist. For more details see Section 1.4.1.

Table 4: Overview of Input Blocks

Wind	**Solar PV**	**Hydropower**	**Nuclear**
PV Plant A Block 1	Wind Onshore A Block 1	Hydropower Block 1	Nuclear
PV Plant A Block 2	Wind Onshore A Block 2		
PV Plant A Block 3	Wind Onshore A Block 3		
PV Plant A Block 4	Wind Onshore A Block 4		
PV Plant A Block 5	Wind Onshore A Block 5		
PV Plant B Block 1	Wind Onshore B Block 1		
PV Plant B Block 2	Wind Onshore B Block 2		
PV Plant B Block 3	Wind Onshore B Block 3		
PV Plant B Block 4	Wind Onshore B Block 4		
PV Plant B Block 5	Wind Onshore B Block 5		
PV Rooftop Block 1	Wind Offshore Block 1		
PV Rooftop Block 2	Wind Offshore Block 2		
PV Rooftop Block 3	Wind Offshore Block 3		

Continued on next page...

Table 4: Overview of Input Blocks (continued)

Wind	**Solar PV**	**Hydropower**	**Nuclear**
PV Rooftop Block 4	Wind Offshore Block 4		
PV Rooftop Block 5	Wind Offshore Block 5		

Source: Own depiction.

Table 5: Overview of Average Wind Speeds in Blocks

Block	**Onshore**	**Offshore**
Block 1	2–5 $\mathrm{m\,s^{-1}}$	3–6 $\mathrm{m\,s^{-1}}$
Block 2	5–6 $\mathrm{m\,s^{-1}}$	6–7 $\mathrm{m\,s^{-1}}$
Block 3	6–7 $\mathrm{m\,s^{-1}}$	7–8 $\mathrm{m\,s^{-1}}$
Block 4	7–8 $\mathrm{m\,s^{-1}}$	8–9 $\mathrm{m\,s^{-1}}$
Block 5	>8 $\mathrm{m\,s^{-1}}$	>9 $\mathrm{m\,s^{-1}}$

Source: Own depiction.

Table 6: Overview of Average Solar PV Capacity Factors in Blocks

Block	**Capacity Factor**
Block 1	0.08–0.14
Block 2	0.14–0.18
Block 3	0.18–0.22
Block 4	0.22–0.26
Block 5	>0.26

Source: Own depiction.

Conversion Potential conversions in the case study are depicted by Table 7. In an extension, commodities like CNG, LNG or methanol could be included here.

Table 7: Overview of Potential Conversions

Input	Output
"GH2"	"LH2"
"GH2"	"NH3"
"LH2"	"GH2"
"NH3"	"GH2"

Source: Own depiction.

Arc Adjacency Structures Adjacency structures allow restriction of trading routes, either via ship or pipeline. Ex-Ante, only arcs where origin and destination are the same are excluded. Many other connections are deemed impractical, such as pipelines between South America and Europe. In addition, some options are disabled, as they are subject to geopolitical tensions. An example here is a pipeline-based connection between China and Japan. A full overview of adjacency structures can be seen in Tables 23 and 24.

Arc Repurposing For the case study, no repurposing is assumed. In more elaborate cases, the model can e.g. be given the option to repurpose former CNG pipelines to transport GH_2.

Storage Repurposing For the case study, no repurposing of conventional Underground Gas Storage (UGS) and Liquefied Natural Gas Storage (LNGS) is assumed. However, inclusion in model data is possible and would be useful in more detailed settings.

Conversion Repurposing For the case study, no repurposing of LNG infrastructure is assumed. However, it can be added in more detailed settings.

Demand Blocks For the sake of tractability, a single block of demand is included in case study calculations. One reason for this is that exertion of market power in different blocks of demand would yield different local prices due to varying elasticity of demand. This violates the "law of one price", which at least for local markets should remain intact. Thus, it is only recommended to use different demand blocks in perfectly competitive scenarios.

1.2.3 Temporal Relations

Time Steps The model is run on a seasonal basis, where in the case study winter months are related to the time step "H" (high demand), and summer time steps are related to the symbol "L" (low demand). However, other time steps, such as hourly ones may be used in a different setting.

Years Overall, the model horizon anticipates decisions until 2075. Calculations are carried out for five-year intervals each, where investment costs etc. are scaled as described in Section 1.3.1. More detailed elaborations on discounting are available in Section 1.3.2.

1.3 General Parameters

1.3.1 Scaling of Investment Cost

All investment costs are scaled by the respective time steps. In this specific instance, investment costs are rescaled by a factor of 0.2, corresponding to 5-year steps as specified in Section 1.2.3

1.3.2 Temporal Preferences

Temporal preferences must be considered in the optimization problems of each player. All monetary values given are generally stated in equivalents of the baseline year (i.e. corrected by inflation). In addition, temporal preferences are accounted for using an overall interest rate of 5 %.

1.3.3 Weights of Time Steps

Each year is assumed to have 365 days (despite some years potentially being leap years). The low demand time step "L" has 183 days, while the high demand time step "H" has 182 days.

1.4 Input Parameters

1.4.1 Renewable Potential Analysis

GIS Analysis First, regional renewable potentials and hourly capacity factors must be determined for the model nodes. A detailed Geographic Information System (GIS) analysis is carried out, based on a uniquely defined version of the GADM0 mapping presented in Table 19. The analysis is carried out with a slightly modified version of the `GlobalEnergyGIS` package (Mattsson et al. 2021).[5] In the procedure, historic weather data from the European Centre for Medium-Range Weather Forecasts (ECMWF), more precisely the ECMWF Reanalysis v5 (ERA5) data set, are utilized to calculate power outputs of hypothetical wind farms and solar plants for the year 2018. Several areas that are not suitable for production are excluded, reasons for this may vary. One reason is population density, which is a determinant for whether or not rooftop PV can be built and whether or not standalone PV or wind farms are a feasible option in some given subspace of any cartographic region. Other criteria, such as waterbodies, forests, croplands, urban areas, natural reserves etc. are considered when filtering for available capacities. All potential spaces are then evaluated with respect to weather data and are grouped by their respective properties. For PV, five blocks (corresponding to given mean capacity factors) are determined for close to grid, far away from grid and rooftop PV (see Table 6). In addition, five blocks (corresponding to mean wind speeds) are determined for close to grid, far

[5] See https://github.com/niclasmattsson/GlobalEnergyGIS.

away from grid and offshore wind farms (see Table 5). During the analysis, various assumptions (e.g. on maximum water depth, distances to coastlines, population densities, remoteness from grid infrastructure, build-specific parameters etc.) are made. These correspond to the default selections for the `GlobalEnergyGIS` package. In addition, existing hydro-power capacities are added. In total, 31 renewable block capacities are determined for every model node with hourly capacity factors for one year.

Domestic Electricity Demand Before renewable electricity becomes available for Hydrogen (H_2) production, domestic electricity demand must be met. This follows the spirit of the "additionality condition" (European Commission 2023). Considering an approximate domestic electricity demand becomes necessary in order not to underestimate costs for additional hydrogen production (potentially for export). The `GlobalEnergyGIS` package ships with a synthetic electricity demand generator, where default values are subsequently used. In future investigations, other results (e.g. from energy system models) could be utilized instead.

Calculation of Residual Supply Quantities In order not to underestimate costs, it is assumed that seasonal domestic electricity demand must be met from RES explicitly, before any designated hydrogen capacities are available. A self-written cost minimization Problem (1) is run to attain the location of renewable generators utilized to primarily fulfill domestic demand. Objective (1a) states the objective:

$$\min_{\substack{cap^{inv}_{rpby},\\ s_{rsy}}} \left[\begin{aligned} &\sum_{r\in\mathcal{R}}\sum_{p\in\mathcal{P}}\sum_{b\in\mathcal{B}}\sum_{y\in\mathcal{Y}} c^{inv}_{rpy}\cdot cap^{inv}_{rpby} \\ &\quad + \sum_{r\in\mathcal{R}}\sum_{s\in\mathcal{S}}\sum_{y\in\mathcal{Y}} BIG\cdot s_{rsy} \end{aligned} \right] \tag{1a}$$

The feasible region to problem (1) is constrained as follows:

$$\text{s.t.} \quad \sum_{y'\in\mathcal{Y}|y-L\leq y'<y} cap^{inv}_{rpby'} \leq cap^{avail}_{rpb} \qquad \forall r\in\mathcal{R}, p\in\mathcal{P}, b\in\mathcal{B}, y\in\mathcal{Y} \tag{1b}$$

$$\sum_{h\in h(s)}\sum_{p\in\mathcal{P}}\sum_{b\in\mathcal{B}}\sum_{y'\in\mathcal{Y}|y-L\leq y'<y} av_{rpbhy} cap^{inv}_{rpby'} \geq \sum_{h\in h(s)} d^{E}_{rhy} \qquad \forall r\in\mathcal{R}, s\in\mathcal{S}, y\in\mathcal{Y} \tag{1c}$$

Here, cap^{inv}_{rpby} stands for the capacity utilized to meet domestic electricity demand, coming at investment costs c^{inv}_{rpy}. Investment costs are assumed to be the same as in Section 1.4.3. Constraint (1b) ensures, that block-wise available potentials cap^{avail}_{rpb} (as calculated in Section 1.4.1) are not exceeded, while Constraint (1c) represents the mass balance equation for supply and demand, i.e. seasonal renewable generation must exceed seasonal electricity demand d^{E}_{rhy}. av_{rpbhy} represents hourly capacity factors, as calculated in Section 1.4.1. This procedure systematically ignores losses during storage within the same time step. However, it also ignores other supplies, such as biomass or the additional

available electricity in the lower demand time step (as storage between time steps is not available). s_{rsy} represents a sufficiently priced slack variable, to always allow for a feasible solution even if RES were insufficiently available. More detailed assumptions could make use of a full energy system model with desired granularity.

Detailed Assumptions and Results Detailed results for availabilities, as well as investment and operational cost calculated, are available in Section 3. More on the underlying cost assumptions is explained in the following sections.

1.4.2 Availability Factors

Renewable Hydrogen Availability Factors Detailed results on the availability of input factors can be seen in Section 3.2. These correspond to seasonal renewable capacity factors from Section 1.4.1, scaled by an electrolyzer efficiency of 0.7.

Nuclear Hydrogen Availability Factors Availability of invested nuclear capacities is assumed to be 90 % (cf. Göke, Wimmers, and von Hirschhausen 2023), scaled by an electrolyzer efficiency of 0.7. This yields an availability of 0.63.

1.4.3 Capacity Expansion Cost

Renewable Hydrogen Capacity Expansion Investment costs for RES approximately follow IEA (2022) and IRENA (2023), where base investments can be seen in Table 25. Significant local divergence of renewable project costs across the world can be observed, which is why investments are scaled manually per node and year (roughly following IRENA 2023). In addition, it is assumed that an electrolyzer of matching capacity is installed. Baseline investment costs are assumed at 750 €/kW, 500 €/kW, and 200 €/kW by 2020, 2030 and 2050 respectively, which is a little higher than values stated by IRENA (2021). The resulting investment cost assumptions including both RES and electrolysis, rescaled to €/MWh/d, can be seen in Table 26.

Nuclear Hydrogen Capacity Expansion Following the results from Göke, Wimmers, and von Hirschhausen (2023), NPP investment costs in some Organization for Economic Cooperation and Development (OECD) related regions are set to 6000 €/kW, while in all other regions, they are set to 4500 €/kW. In addition, a surcharge on investments related to decommissioning is added, such that total nuclear investment costs are estimated at 7500 €/kW and 5500 €/kW
With an underlying investment cost of 750 €/kW, 500 €/kW, and 200 €/kW for the electrolyzers, resulting nuclear hydrogen investment costs are depicted in Table 28. Values account for differences in lifetime of nuclear plants and electrolyzers by assuming two investment cycles for electrolyzers. In contrast to RES, electrolyzer investment costs are relatively small in comparison to risks and uncertainty from delays during construction (cf. Lovins 2022; Rothwell 2022).

1.4.4 Input Operational Cost Functions

Renewable Cost Function Parameters Operation and Maintenance (OM) cost for renewables are assumed to be 2 % of Capital Expenditure (CAPEX), while 4 % is assumed for electrolyzers. Variable OM costs are scaled based on capacity factors and electrolyzer efficiency, such that annual payments match. The results are depicted in Table 26.

Nuclear Cost Function Parameters Roughly in accordance with Göke, Wimmers, and von Hirschhausen (2023), NPP operational costs are assumed to be constant at 25 €/MWh in some OECD related regions, while in all other regions they are set to 20 €/MWh. In addition, 4 % of electrolyzer investment costs is assumed as annual OM cost. This amounts to 30 000 €/MW, 20 000 €/MW, and 8000 €/MW by 2020, 2030, and 2050, respectively. The resulting operational cost is displayed in Table 29, where η represents electrolyzer efficiency.

1.4.5 Exogenous Input Capacities

Renewable Capacities Exogenous renewable hydrogen input capacities are assumed to be non-existent.

Nuclear Capacities Exogenous nuclear hydrogen input capacities are assumed to be non-existent.

1.4.6 Capacity Expansion Limits

Renewable Capacity Expansion Capacity expansion for RES is limited by the residual capacities from Section 1.4.1. The results can be seen in Table 26.

Nuclear Capacity Expansion Capacity expansion limits can be set to a sufficiently high value. A maximum capacity expansion of 100 TW h of daily capacity per block is sufficient.

1.4.7 Lifetimes

Lifetimes assumed during both the GIS analysis from Section 1.4.4 and within the model are depicted in Table 8.

Table 8: Input Lifetimes

Technology	Assumption
NPP	40 years
RES	20 years
Electrolysis	20 years

Source: Own depiction.

1.5 Production Parameters

1.5.1 General Remarks

Production for Hydrogen with electricity from RES and NPP, as they are already covered within the input procurement. In this case, production simply serves as a vehicle to keep track of origin of production.

1.5.2 Production Cost

Nuclear Electrolysis All costs related to the production step are already considered within Section 1.4, hence no operational production costs are encountered.

Renewable Electrolysis All costs related to the production step are already considered within Section 1.4, hence no operational production costs are encountered.

1.5.3 Exogenous Production Capacities

Nuclear Electrolysis Since costs related to the production step are already accounted for within Section 1.4 and no costs are encountered for both production cost and capacity expansion (see Sections 1.5.2 and 1.5.5), exogenous capacities can be set to zero.

Renewable Electrolysis Since costs related to the production step are already accounted for within Section 1.4 and no costs are encountered for both production cost and capacity expansion (see Sections 1.5.2 and 1.5.5), exogenous capacities can be set to zero.

1.5.4 Production Capacity Expansion Limits

Nuclear Electrolysis All production expansion is limited to a daily capacity expansion of 100 TW h.

Renewable Electrolysis All production expansion is limited to a daily capacity expansion of 100 TW h.

1.5.5 Production Capacity Expansion Cost

Nuclear Electrolysis Since costs related to the production step are already accounted for within Section 1.4 and no costs are encountered during production (see Section 1.5.2), investment costs are set to zero.

Renewable Electrolysis Since costs related to the production step are already accounted for within Section 1.4 and no costs are encountered during production (see Section 1.5.2), investment costs are set to zero.

1.5.6 Production Technology Lifetimes

While capacity expansion and lifetimes are considered already during Section 1.4, the data set gives 20 years of lifetime for electrolysis-related investments.

1.5.7 Production Factor Intensity

Since production technologies simply serve as a vehicle to keep track of origin, all inefficiencies have already been taken into consideration during previous steps.

Table 9: Production Factor Intensity

Technology	**Output**	**Renewable Electricity**	**Nuclear Electricity**
Renewable Electrolysis	GH2	1	0
Nuclear Electrolysis	GH2	0	1

Source: Own depiction.

1.6 Trade Parameters

1.6.1 Exertion of Market Power

Traders may exert market power in accordance with a Nash-Cournot setting. It is differentiated between domestic and foreign markets, as traders may behave differently under local regulation. Exact settings are case-dependent. Further, conjectural variation approaches can be modeled by setting values between 0 and 1.

1.6.2 Sanctions on Sales

Sales may be sanctioned either for specific traders or for commodities from different origin. This depends upon specific cases, for the case study no restrictions are implemented.

1.7 Conversion Parameters

1.7.1 Exogenous Conversion Capacities

For the case study, no exogenous conversion capacities are assumed. While some present-day ammonia production exists (cf. USGS 2023), it is predominantly fossil natural gas based.

1.7.2 Technology Lifetimes

Table 10 depicts the lifetime assumptions for conversion technologies.

Table 10: Overview of Conversion Technology Lifetimes

Input	Output	Lifetime	Reference
"GH2"	"LH2"	30	IEA 2019
"GH2"	"NH3"	25	IEA 2019
"LH2"	"GH2"	30	Same as liquefaction
"NH3"	"GH2"	30	IEA 2019

Source: Own depiction. Note: Lifetime in years.

1.7.3 Conversion Factor Intensities

Table 11 depicts the factor intensities for conversion technologies.

Table 11: Overview of Conversion Technology Factor Intensities

Input	Output	Factor Intensity	Reference
"GH2"	"LH2"	1/0.7	IEA 2019
"GH2"	"NH3"	1.25	Mass Balance based[6]
"LH2"	"GH2"	1.01	Similar to LNG
"NH3"	"GH2"	1.3	IEA 2019

Source: Own depiction.

1.7.4 Operational Costs

Table 12 depicts operational cost assumptions.

Table 12: Overview of Conversion Technology Operational Cost

Input	Output	2020	2030	2050	Reference
"GH2"	"LH2"	7.80	6	4	IEA (2019), own projection.
"GH2"	"NH3"	0.5	0.5	0.5	Gallardo et al. (2021)
"LH2"	"GH2"	5.20	4	3	Similar proportions as for LNG
"NH3"	"GH2"	4.55	4	3	IEA (2019), own projection.

Source: Own depiction. Note: All units in €/MWh. Natural gas included for reference.

[6] Includes ammonia mass specific electricity consumption of $0.64\,\mathrm{kW\,h\,kg^{-1}}$ for the Air Seperation Unit (ASU) (Armijo and Philibert 2020; Gallardo et al. 2021; Ikäheimo et al. 2018)

1.7.5 Costs of Capacity Expansion

Table 13 depicts investment cost assumptions

Table 13: Overview of Conversion Technology Investment Cost

Input	Output	2020	2030	2050	Reference
"GH2"	"LH2"	70 000	50 000	35 000	IEA (2019), own projection.
"GH2"	"NH3"	8600	8600	8600	Gallardo et al. (2021)
"LH2"	"GH2"	35 000	25 000	15 000	Similar Proportions as LNG
"NH3"	"GH2"	22 500	20 000	15 000	IEA (2019), projection own.

Source: Own depiction. Note: €/MWh of daily capacity. Natural gas included for reference.

1.7.6 Costs of Repurposing

No repurposing of natural gas terminals is assumed for the case study.

1.7.7 Repurposing Factor

No repurposing of natural gas terminals is assumed for the case study.

1.8 Transport Parameters

1.8.1 General Remarks

Within the model, it is assumed that only pipeline-based infrastructure is modeled with fixed capacities (and the respective option to expand). Shipping routes are assumed to be flexibly operated (i.e. with sufficiently large capacities), based on a Levelized Cost of Transportation (LCOT) basis.

1.8.2 Technology Lifetimes

Table 14 depicts the assumed technology lifetimes.

Table 14: Overview of Transportation Technology Lifetimes

Commodity	Type	Lifetime	Reference
"LH2"	Shipping	30	IEA (2019)
"GH2"	Pipeline	40	IEA (2019)
"NH3"	Shipping	30	IEA (2019)

Source: Own depiction. Note: Lifetime in years.

1.8.3 Operational Costs

Operational costs are encountered for both pipeline and shipping transportation. Total operational costs incurred are based on the actual arc distances from Tables 21 and 22. For this reason, costs are specified on a per 1000 km basis, where Table 15 states the underlying cost data.

Table 15: Overview of Transportation Cost

Commodity	**Type**	**2020**	**2030**	**2050**	**Reference**
"LH2"	Shipping	1.2	1.05	0.85	Projection own.[7]
"GH2"	Pipeline	4.25	3.25	2.3	IEA (2019), projection own.
"NH3"	Shipping	0.15	0.15	0.15	IEA (2019)

Source: Own depiction. Note: All costs are given in €/MWh on a 1000 km basis.

1.8.4 Capacity Expansion Costs

Capacity expansion costs are only incurred for pipeline-based technologies (see Table 16).

Table 16: Overview of Transportation Cost

Commodity	**Type**	**2020**	**2030**	**2050**	**Reference**
"LH2"	Shipping	0	0	0	
"GH2"	Pipeline	39 000	30 000	20 000	IEA (2019), projection own.
"NH3"	Shipping	0	0	0	

Source: Own depiction. Note: Costs are given in €/MWh of daily capacity per 1000 km.

1.8.5 Exogenous Capacities

Only capacities for pipeline transport are considered. While e.g. ammonia is already traded on a Mt-basis (IEA 2021), capacity expansion for shipping is broken down via LCOT since operation of routes is flexible and investments are not fixed to specific arcs. Since pure hydrogen is not yet traded on a global scale, no pipelines have exogenous capacities.

1.8.6 Losses

Table 17 presents the assumed losses.

[7] Some data based on Brändle, Schönfisch, and Schulte (2020).

Table 17: Overview of Transportation Technology Losses

Commodity	Type	Losses	Reference
"LH2"	Shipping	0.006	IEA (2019)
"GH2"	Pipeline	0.02	Similar to natural gas.
"NH3"	Shipping	0.003	IEA (2019)

Source: Own depiction. Note: Losses per 1000 km.

1.8.7 Capacity Repurposing Costs

No repurposing options are assumed for the case study.

1.8.8 Repurposing Factor

No repurposing of natural gas infrastructure is assumed for the case study.

1.9 Storage Parameters

1.9.1 Exogenous Capacities

No exogenous storages are assumed for the case study.

1.9.2 Injection Costs

Since IEA (2019) reports very low numbers for operational expenses, they are set slightly higher at 3.5 €/MWh for hydrogen and 1 €/MWh for ammonia.

1.9.3 Extraction Costs

All operational costs are assumed to be covered by injection costs. Hence, extraction costs are zero.

1.9.4 Capacity Expansion Costs

Capacity expansion costs are depicted in Table 18.

Table 18: Overview of Storage Expansion Costs

Commodity	Cost	Reference
"LH2"	1000	Reuß et al. (2017)
"GH2"	200	Yousefi et al. (2023)
"NH3"	300	IEA (2019)

Source: Own depiction. Note: Cost given in €/MWh.

1.9.5 Losses

Losses of 2 % are assumed when storing between time steps.

1.9.6 Technology Lifetimes

A lifetime of 20 years is assumed for all storage technologies.

1.9.7 Capacitiy Expansion Limits

Storage capacity expansion is limited to 10 000 TW h

1.9.8 Repurposing Costs

It is assumed, that no repurposing of storage is possible.

1.9.9 Repurposing Factor

No repurposing of natural gas infrastructure is assumed for the case study.

1.10 Final Demand Parameters

1.10.1 Inverse Demand Functions

Inverse demand functions are assumed to follow a block-wise linear functional form (see Equation (2)):

$$\tilde{P}^{T\to D}_{ncbmy}\left(\sum_{o\in\mathcal{O}}\sum_{t\in\mathcal{T}(n)} q^{T\to D}_{tncbomy}\right) = \alpha^{D}_{ncbmy} + \beta^{D}_{ncbmy}\left(\sum_{o\in\mathcal{O}}\sum_{t\in\mathcal{T}(n)} q^{T\to D}_{tncbomy}\right) \tag{2}$$

The parameters $\alpha^{D}_{ncbmy}, \beta^{D}_{ncbmy}$ are subsequently defined around a reference point with an assumed price elasticity. This implies, that inverse demand curves are uniquely defined by supplying a set of reference quantity and price, as well as a given price elasticity. Elaborations for reference quantities, prices and elasticities can be found in Sections 1.10.2 to 1.10.4. For ease of notation, Equation (3) will be used subsequently to abbreviate the total quantity consumed of commodity c in block b during time step m of year y in node n:

$$Q_{ncbmy} = \sum_{o\in\mathcal{O}}\sum_{t\in\mathcal{T}(n)} q^{T\to D}_{tncbomy} \tag{3}$$

The partial derivative of Equation (2) with respect to total supply quantity is given by Equation (4):

$$\frac{\partial \tilde{P}^{T\to D}_{ncbmy}\left(Q_{ncbmy}\right)}{\partial Q_{ncbmy}} = \beta^{D}_{ncbmy} \tag{4}$$

The price elasticity at a reference point defined by a reference price $\bar{P}_{ncbmy}$ and a reference quantity $\bar{Q}_{ncbmy}$ can be stated as:

$$\epsilon^{\tilde{P}}_{ncbmy} = \frac{\partial Q_{ncbmy}}{\partial \tilde{P}^{T\rightarrow D}_{ncbmy}\left(Q_{ncbmy}\right)} \frac{\bar{P}_{ncbmy}}{\bar{Q}_{ncbmy}} \tag{5}$$

Rearranging Equation (5) yields:

$$\frac{\partial \tilde{P}^{T\rightarrow D}_{ncbmy}\left(Q_{ncbmy}\right)}{\partial Q_{ncbmy}} = \frac{\bar{P}_{ncbmy}}{\bar{Q}_{ncbmy}} \frac{1}{\epsilon^{\tilde{P}}_{ncbmy}} \tag{6}$$

Equating Equations (4) and (6), we get:

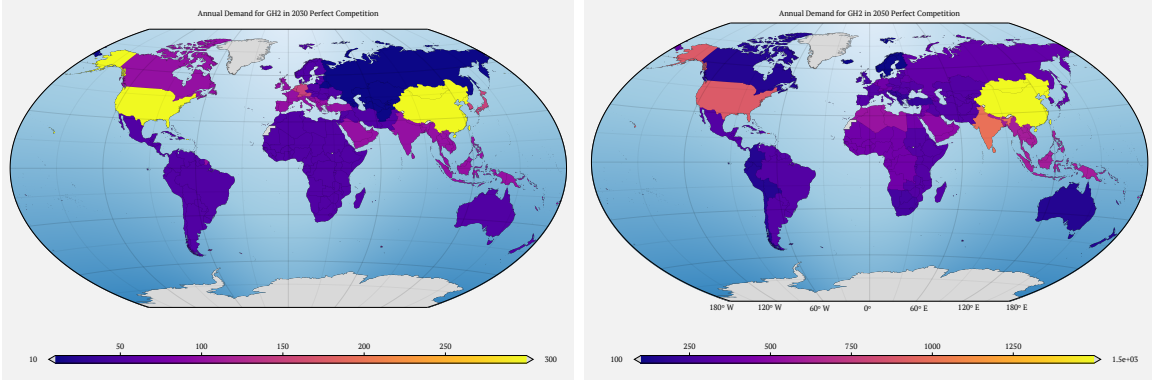
$$\beta^{D}_{ncbmy} = \frac{\bar{P}_{ncbmy}}{\bar{Q}_{ncbmy}} \frac{1}{\epsilon^{\tilde{P}}_{ncbmy}} \tag{7}$$

Inserting Equation (7) into Equation (2), we get:

$$\alpha^{D}_{ncbmy} = \bar{P}_{ncbmy} - \frac{\bar{P}_{ncbmy}}{\epsilon^{\tilde{P}}_{ncbmy}} \tag{8}$$

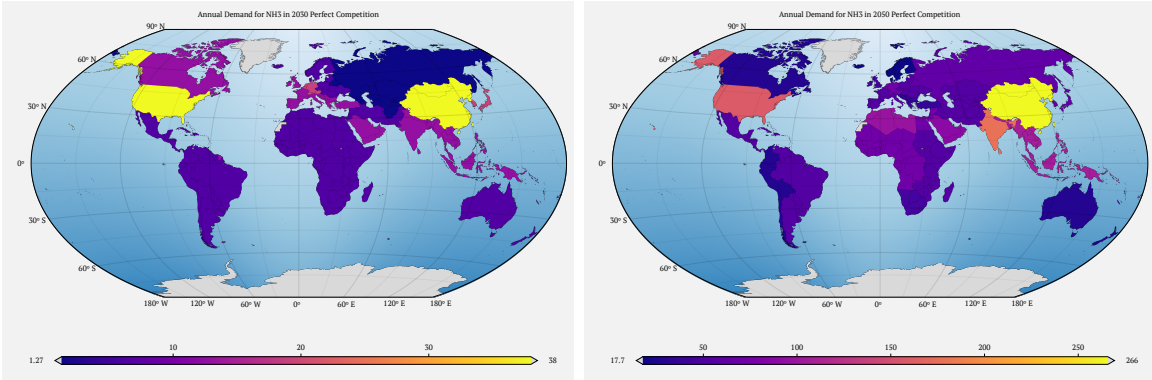
1.10.2 Reference Quantities

It is assumed, that no demand for liquefied commodities exists (i.e. LH_2). Also, no demand in 2020 is assumed for pure hydrogen (since it largely equates to demand for natural gas and can hence be accounted for there). IEA (2022, based on International Energy Agency Net Zero Emissions by 2050 Scenario (NZE)) assumes a final hydrogen demand of 299 BCMe (2900 TW h) and 1509 BCMe (14 750 TW h by 2030 and 2050 respectively (of which 60 BCMe (586 TW h) and 395 BCMe (3860 TW h) correspond to inputs for other hydrogen derivatives). Since only 10 % of current global ammonia production is traded globally (IEA 2021), demand values are based on production values from USGS (2023), with an additional demand of roughly half the derivative hydrogen going to ammonia in future years. Figures 2 and 3 depict the annual reference demands for ammonia and hydrogen. It should be noted that this scenario corresponds to a quick and large-scale adaption of hydrogen across all world regions. This corresponds to the understanding from the latest Conference of the Parties (COP), which despite failing to turn page on the fossil fuel era, declares the following objective: "Transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, to achieve net zero by 2050 in keeping with the science" (Conference of the Parties 2023). Still, it should be noted, that for some fossil exporting nations, such as the Russian Federation or the United States of America under a second Trump administration, the scenario setting constitutes a highly optimistic assumption, which may be far off from reality.



(a) 2030 (b) 2050

Figure 2: Annual Reference Demand for Hydrogen
Source: Own depiction. Note: Quantity given in TWh/a.



(a) 2030 (b) 2050

Figure 3: Annual Reference Demand for Ammonia
Source: Own depiction. Note: Quantity given in TWh/a.

1.10.3 Reference Prices

Reference prices are subject to the calibration procedure and may hence be adapted to match scenario-specific assumptions. In this case study, they are calibrated such that consumption quantities in the perfectly competitive scenario match reference quantities. The strategic case is then run with the same reference prices.

1.10.4 Reference Elasticities

For all commodities, a similar price elasticity of demand is assumed. For the simple demonstration, both hydrogen and ammonia come at a price elasticity of -0.3.

2 Detailed Geographical Relationships

2.1 Tabular Nodal Assignment

Table 19 gives a detailed overview of an allocation for regions to the 26 model nodes.

Table 19: Detailed Assignment of Model Nodes

Common Name	**GADM0**	**Model Region**	**Model3**
Indonesia	Indonesia	Pacific Islands	PAC
Malaysia	Malaysia	Pacific Islands	PAC
Chile	Chile	South-Western America	SWA
Bolivia	Bolivia	South-Western America	SWA
Peru	Peru	South-Western America	SWA
Argentina	Argentina	South-Eastern America	SEA
Cyprus	Cyprus	South-Eastern Europe	SEE
India	India	India (with Sri Lanka and Maledives)	IND
China	China	China (with Mongolia and North Korea)	CHN
Israel	Israel	Levant	LEV
West Bank and Gaza	Palestina	Levant	LEV
Lebanon	Lebanon	Levant	LEV
Ethiopia	Ethiopia	Eastern Africa	EAF
South Sudan	South Sudan	Eastern Africa	EAF
Somalia	Somalia	Eastern Africa	EAF
Kenya	Kenya	Eastern Africa	EAF
Pakistan	Pakistan	Iran (with Pakistan and Iraq)	IRN
Malawi	Malawi	Eastern Africa	EAF
Tanzania	Tanzania	Eastern Africa	EAF
Syrian Arab Republic	Syria	Levant	LEV

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
France	France	South-Western Europe	SWE
Suriname	Suriname	South-Eastern America	SEA
Guyana	Guyana	South-Eastern America	SEA
Morocco	Morocco	Northern Africa	NAF
Costa Rica	Costa Rica	Central America	CEA
Nicaragua	Nicaragua	Central America	CEA
Bhutan	Bhutan	South-Eastern Asia	EAS
Ukraine	Ukraine	Eastern Europe	EAE
Belarus	Belarus	Russia (with Belarus and Caucasus)	RUS
Namibia	Namibia	Southern Africa	SAF
South Africa	South Africa	Southern Africa	SAF
Saint-Martin (Fr.)	Saint-Martin	Central America	CEA
Sint Maarten (Neth.)	Sint Maarten	Central America	CEA
Oman	Oman	Gulf Region	GLF
Uzbekistan	Uzbekistan	Central Asia	CAS
Kazakhstan	Kazakhstan	Central Asia	CAS
Tajikistan	Tajikistan	Central Asia	CAS
Lithuania	Lithuania	Eastern Europe	EAE
Brazil	Brazil	South-Eastern America	SEA
Uruguay	Uruguay	South-Eastern America	SEA
Mongolia	Mongolia	China (with Mongolia and North Korea)	CHN
Russian Federation	Russia	Russia (with Belarus and Caucasus)	RUS
Czech Republic	Czech Republic	Eastern Europe	EAE

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
Germany	Germany	Central Europe	CEE
Estonia	Estonia	Eastern Europe	EAE
Latvia	Latvia	Eastern Europe	EAE
Norway	Norway	Northern Europe	NOE
Sweden	Sweden	Northern Europe	NOE
Finland	Finland	Northern Europe	NOE
Vietnam	Vietnam	South-Eastern Asia	EAS
Cambodia	Cambodia	South-Eastern Asia	EAS
Luxembourg	Luxembourg	Central Europe	CEE
United Arab Emirates	United Arab Emirates	Gulf Region	GLF
Belgium	Belgium	Central Europe	CEE
Georgia	Georgia	Russia (with Belarus and Caucasus)	RUS
North Macedonia	Macedonia	South-Eastern Europe	SEE
Albania	Albania	South-Eastern Europe	SEE
Azerbaijan	Azerbaijan	Russia (with Belarus and Caucasus)	RUS
Kosovo	Kosovo	South-Eastern Europe	SEE
Turkey	Turkey	South-Eastern Europe	SEE
Spain	Spain	South-Western Europe	SWE
Lao People's Democratic Republic	Laos	South-Eastern Asia	EAS
Kyrgyz Republic	Kyrgyzstan	Central Asia	CAS
Armenia	Armenia	Russia (with Belarus and Caucasus)	RUS
Denmark	Denmark	Northern Europe	NOE

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
Libya	Libya	Northern Africa	NAF
Tunisia	Tunisia	Northern Africa	NAF
Romania	Romania	Eastern Europe	EAE
Hungary	Hungary	Eastern Europe	EAE
Slovak Republic	Slovakia	Eastern Europe	EAE
Poland	Poland	Eastern Europe	EAE
Ireland	Ireland	British Islands	BRI
United Kingdom	United Kingdom	British Islands	BRI
Greece	Greece	South-Eastern Europe	SEE
Zambia	Zambia	Eastern Africa	EAF
Sierra Leone	Sierra Leone	Western Africa	WAF
Guinea	Guinea	Western Africa	WAF
Liberia	Liberia	Western Africa	WAF
Central African Republic	Central African Republic	Western Africa	WAF
Sudan	Sudan	Eastern Africa	EAF
Djibouti	Djibouti	Eastern Africa	EAF
Eritrea	Eritrea	Eastern Africa	EAF
Austria	Austria	Central Europe	CEE
Iraq	Iraq	Iran (with Pakistan and Iraq)	IRN
Italy	Italy	South-Western Europe	SWE
Switzerland	Switzerland	Central Europe	CEE
Liechtenstein	Liechtenstein	Central Europe	CEE
Côte d'Ivoire	Côte d'Ivoire	Western Africa	WAF
Serbia	Serbia	South-Eastern Europe	SEE

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
Mali	Mali	Western Africa	WAF
Senegal	Senegal	Western Africa	WAF
Nigeria	Nigeria	Western Africa	WAF
Benin	Benin	Western Africa	WAF
Angola	Angola	Western Africa	WAF
Croatia	Croatia	South-Eastern Europe	SEE
Slovenia	Slovenia	South-Eastern Europe	SEE
Qatar	Qatar	Gulf Region	GLF
Saudi Arabia	Saudi Arabia	Gulf Region	GLF
Botswana	Botswana	Southern Africa	SAF
Zimbabwe	Zimbabwe	Eastern Africa	EAF
Bulgaria	Bulgaria	South-Eastern Europe	SEE
Thailand	Thailand	South-Eastern Asia	EAS
San Marino	San Marino	South-Western Europe	SWE
Haiti	Haiti	Central America	CEA
Dominican Republic	Dominican Republic	Central America	CEA
Chad	Chad	Western Africa	WAF
Kuwait	Kuwait	Gulf Region	GLF
El Salvador	El Salvador	Central America	CEA
Guatemala	Guatemala	Central America	CEA
Timor-Leste	Timor-Leste	Pacific Islands	PAC
Brunei Darussalam	Brunei	Pacific Islands	PAC
Monaco	Monaco	South-Western Europe	SWE
Algeria	Algeria	Northern Africa	NAF
Mozambique	Mozambique	Eastern Africa	EAF

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
eSwatini	Swaziland	Southern Africa	SAF
Burundi	Burundi	Eastern Africa	EAF
Rwanda	Rwanda	Eastern Africa	EAF
Myanmar	Myanmar	South-Eastern Asia	EAS
Bangladesh	Bangladesh	South-Eastern Asia	EAS
Andorra	Andorra	South-Western Europe	SWE
Afghanistan	Afghanistan	Central Asia	CAS
Montenegro	Montenegro	South-Eastern Europe	SEE
Bosnia and Herzegovina	Bosnia and Herzegovina	South-Eastern Europe	SEE
Uganda	Uganda	Eastern Africa	EAF
Guantanamo Bay (US)	Guantanamo Bay Naval Base	United States of America	USA
Cuba	Cuba	Central America	CEA
Honduras	Honduras	Central America	CEA
Ecuador	Ecuador	South-Western America	SWA
Colombia	Colombia	South-Western America	SWA
Paraguay	Paraguay	South-Eastern America	SEA
Portugal	Portugal	South-Western Europe	SWE
Moldova	Moldova	Eastern Europe	EAE
Turkmenistan	Turkmenistan	Central Asia	CAS
Jordan	Jordan	Levant	LEV
Nepal	Nepal	South-Eastern Asia	EAS
Lesotho	Lesotho	Southern Africa	SAF
Cameroon	Cameroon	Western Africa	WAF
Gabon	Gabon	Western Africa	WAF

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
Niger	Niger	Western Africa	WAF
Burkina Faso	Burkina Faso	Western Africa	WAF
Togo	Togo	Western Africa	WAF
Ghana	Ghana	Western Africa	WAF
Guinea-Bissau	Guinea-Bissau	Western Africa	WAF
Gibraltar (UK)	Gibraltar	British Islands	BRI
United States of America	United States	United States of America	USA
Canada	Canada	Canada	CAN
Mexico	Mexico	Central America	CEA
Belize	Belize	Central America	CEA
Panama	Panama	Central America	CEA
Papua New Guinea	Papua New Guinea	Pacific Islands	PAC
Mauritania	Mauritania	Western Africa	WAF
Equatorial Guinea	Equatorial Guinea	Western Africa	WAF
Vatican City	Vatican City	South-Western Europe	SWE
Australia	Australia	Australia and New Zealand	ANZ
Greenland (Den.)	Greenland	N.A.	N.A.
Fiji	Fiji	Pacific Islands	PAC
New Caledonia (Fr.)	New Caledonia	South-Western Europe	SWE
Madagascar	Madagascar	Eastern Africa	EAF
Philippines	Philippines	Pacific Islands	PAC
Sri Lanka	Sri Lanka	India (with Sri Lanka and Maledives)	IND
Curaçao (Neth.)	Curaçao	Central America	CEA

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
Aruba (Neth.)	Aruba	Central America	CEA
Turks and Caicos Islands (UK)	Turks and Caicos Islands	Central America	CEA
Japan	Japan	Japan and South Korea	JSK
Saint-Pierre-et-Miquelon (Fr.)	Saint Pierre and Miquelon	South-Western Europe	SWE
Iceland	Iceland	Northern Europe	NOE
Pitcairn Islands (UK)	Pitcairn Islands	British Islands	BRI
French Polynesia (Fr.)	French Polynesia	South-Western Europe	SWE
French Southern and Antarctic Lands (Fr.)	French Southern Territories	South-Western Europe	SWE
Seychelles	Seychelles	Eastern Africa	EAF
Kiribati	Kiribati	Pacific Islands	PAC
Marshall Islands	Marshall Islands	Pacific Islands	PAC
Trinidad and Tobago	Trinidad and Tobago	Central America	CEA
Grenada	Grenada	Central America	CEA
Saint Vincent and the Grenadines	Saint Vincent and the Grenadines	Central America	CEA
Barbados	Barbados	Central America	CEA
Saint Lucia	Saint Lucia	Central America	CEA
Dominica	Dominica	Central America	CEA
Montserrat (UK)	Montserrat	British Islands	BRI
Antigua and Barbuda	Antigua and Barbuda	Central America	CEA
Saint Kitts and Nevis	Saint Kitts and Nevis	Central America	CEA
Saint-Barthélemy (Fr.)	Saint-Barthélemy	South-Western Europe	SWE
Puerto Rico (US)	Puerto Rico	United States of America	USA

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
Anguilla (UK)	Anguilla	British Islands	BRI
British Virgin Islands (UK)	British Virgin Islands	British Islands	BRI
Jamaica	Jamaica	Central America	CEA
Cayman Islands (UK)	Cayman Islands	British Islands	BRI
Bermuda (UK)	Bermuda	British Islands	BRI
Heard Island and McDonald Islands (Aus.)	Heard Island and McDonald Islands	Australia and New Zealand	ANZ
Mauritius	Mauritius	Eastern Africa	EAF
Comoros	Comoros	Eastern Africa	EAF
São Tomé and Príncipe	São Tomé and Príncipe	Western Africa	WAF
Cabo Verde	Cape Verde	Western Africa	WAF
Malta	Malta	South-Western Europe	SWE
Jersey (UK)	Jersey	British Islands	BRI
Guernsey (UK)	Guernsey	British Islands	BRI
Isle of Man (UK)	Isle of Man	British Islands	BRI
Faroe Islands (Den.)	Faroe Islands	Northern Europe	NOE
British Indian Ocean Territory (UK)	British Indian Ocean Territory	British Islands	BRI
Singapore	Singapore	Pacific Islands	PAC
Norfolk Island (Aus.)	Norfolk Island	Australia and New Zealand	ANZ
Cook Islands (NZ)	Cook Islands	Pacific Islands	PAC
Tonga	Tonga	Pacific Islands	PAC
Wallis-et-Futuna (Fr.)	Wallis and Futuna	South-Western Europe	SWE
Samoa	Samoa	Pacific Islands	PAC

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	**GADM0**	**Model Region**	**Model3**
Solomon Islands	Solomon Islands	Pacific Islands	PAC
Tuvalu	Tuvalu	Pacific Islands	PAC
Maldives	Maldives	India (with Sri Lanka and Maledives)	IND
Nauru	Nauru	Pacific Islands	PAC
South Georgia and South Sandwich Islands (UK)	South Georgia and the South Sandwich Islands	British Islands	BRI
Falkland Islands (UK)/Islas Malvinas	Falkland Islands	British Islands	BRI
Vanuatu	Vanuatu	Pacific Islands	PAC
Niue (NZ)	Niue	Pacific Islands	PAC
American Samoa (US)	American Samoa	United States of America	USA
Palau	Palau	Pacific Islands	PAC
Guam (US)	Guam	United States of America	USA
Northern Mariana Islands (US)	Northern Mariana Islands	United States of America	USA
Bahrain	Bahrain	Gulf Region	GLF
Clipperton Island (Fr.)	Clipperton Island	South-Western Europe	SWE
Bonaire (Neth.)	Netherlands	Central Europe	CEE
Sint Eustatius (Neth.)	Netherlands	Central Europe	CEE
Saba (Neth.)	Netherlands	Central Europe	CEE
Netherlands	Netherlands	Central Europe	CEE
Cocos (Keeling) Islands (Aus.)	Australian Indian Ocean Territories	Australia and New Zealand	ANZ
Christmas Island (Aus.)	Australian Indian Ocean Territories	Australia and New Zealand	ANZ

Continued on next page...

Table 19: Detailed Assignment of Model Nodes (continued)

Common Name	GADM0	Model Region	Model3
Johnston Atoll (US)	United States Minor Outlying Islands	United States of America	USA
Jarvis Island (US)	United States Minor Outlying Islands	United States of America	USA
Baker Island (US)	United States Minor Outlying Islands	United States of America	USA
Howland Island (US)	United States Minor Outlying Islands	United States of America	USA
Wake Island (US)	United States Minor Outlying Islands	United States of America	USA
Midway Islands (US)	United States Minor Outlying Islands	United States of America	USA
Navassa Island (US)	United States Minor Outlying Islands	United States of America	USA
Palmyra Atoll (US)	United States Minor Outlying Islands	United States of America	USA
Kingman Reef (US)	United States Minor Outlying Islands	United States of America	USA
Tokelau (NZ)	New Zealand	Australia and New Zealand	ANZ
New Zealand	New Zealand	Australia and New Zealand	ANZ
N.A.	Antarctica	N.A.	N.A.

Source: Own depiction.

2.2 Geographical Reference Points for Distance Calculations

Table 20 gives an overview of geographical coordinates and references the respective (potentially) existing terminals.

Table 20: Overview of Harbor Reference Points

Model Region	**Reference**	**Latitude**	**Longitude**
Pacific Islands	Bintulu	3.18	113.04
South-Western America	Pampa Melchorita	-13.25	-76.3
South-Eastern America	Guanabara Bay	-22.91	-43.07
South-Eastern Europe	Etki	38.74	26.91
India (with Sri Lanka and Maledives)	Kochi	9.98	76.24
China (with Mongolia and North Korea)	Yangshan	31.17	121.71
Levant	Hadera	32.44	34.89
Eastern Africa	Lindi	-9.89	39.75
Iran (with Pakistan and Iraq)	Bandar Abbas	27.18	56.29
South-Western Europe	Dunkerque	51.03	2.34
Japan and South Korea	Sodegaura	35.42	140.01
Northern Africa	Arzew	35.86	-0.35
Central America	Energia Costa Azul	32	-116.84
Western Africa	Bonny	4.42	7.15
South-Eastern Asia	Tha Phut	12.71	101.14
Eastern Europe	Świnoujście	53.9	14.34
Russia (with Belarus and Caucasus)	Yamal	71.26	72.09
Southern Africa	Durban	-29.93	30.97
Gulf Region	Qatargas	25.91	51.54
Central Asia	Turkmenbashi	40.02	52.95
Central Europe	Gate	51.96	4.08
Northern Europe	Hammerfest	70.67	23.7
British Islands	Grain	51.43	0.74
United States of America	Freeport	28.96	-95.31
Canada	Saint John	45.21	-66.16

Continued on next page...

Table 20: Overview of Harbor Reference Points (continued)

Model Region	**Reference**	**Latitude**	**Longitude**
Australia and New Zealand	QCLNG	-23.81	151.24
N.A.	N.A.	-79.91	0

Source: Own depiction.

2.3 Calculated Pipeline and Shipping Distances

Tables 21 and 22 depict the calculated pipeline and shipping distances for Section 1.2.1.

2.4 Adjacency Structures for Pipeline and Shipping

Tables 23 and 24 depict the adjacency structures for Section 1.2.2.

Table 21: Overview of Shipping Distances

Start	PAC	SWA	SEA	SEE	IND	CHN	LEV	EAF	IRN	SWE	JSK	NAF	CEA	WAF	EAS	EAE	RUS	SAF	GLF	CAS	CEE	NOE	BRI	USA	CAN	ANZ
PAC	40.00	21.92	18.32	12.71	6.16	5.21	12.07	10.49	8.85	17.57	6.61	14.88	15.65	17.26	3.80	17.74	22.60	11.19	9.46	15.96	17.71	20.06	17.65	23.30	20.76	8.84
SWA	21.92	40.00	9.66	14.29	21.15	18.02	15.18	17.22	20.41	11.99	16.32	11.84	7.56	14.12	22.05	13.15	15.80	14.44	21.02	17.49	12.13	13.26	12.07	5.97	7.64	16.04
SEA	18.32	9.66	40.00	11.14	14.95	20.67	12.04	10.94	15.36	9.85	22.07	8.70	14.09	7.65	18.48	11.27	14.85	8.16	15.97	14.34	10.00	12.31	9.94	10.27	9.56	18.55
SEE	12.71	14.29	11.14	40.00	7.50	14.83	1.46	8.05	6.77	5.49	16.31	2.80	16.86	10.14	12.36	5.46	10.53	10.12	7.38	3.40	5.64	7.99	5.58	11.88	8.68	17.75
IND	6.16	21.15	14.95	7.50	40.00	8.28	6.86	5.80	3.56	12.36	9.75	9.67	18.95	13.89	5.81	12.53	17.39	7.58	4.16	10.75	12.50	14.85	12.44	18.74	15.55	11.26
CHN	5.21	18.02	20.67	14.83	8.28	40.00	14.19	12.84	10.98	19.69	2.41	17.00	11.32	19.61	4.61	19.86	22.01	13.54	11.58	18.08	19.83	22.18	19.77	19.06	20.72	8.64
LEV	12.07	15.18	12.04	1.46	6.86	14.19	40.00	7.40	6.12	6.39	15.66	3.70	17.76	11.04	11.72	6.48	11.43	9.48	6.73	4.70	6.54	8.88	6.47	12.77	9.58	17.10
EAF	10.49	17.22	10.94	8.05	5.80	12.84	7.40	40.00	5.92	12.90	14.24	10.21	22.44	9.87	10.38	13.07	17.94	3.57	6.53	11.29	13.05	15.40	12.99	18.62	16.09	14.62
IRN	8.85	20.41	15.36	6.77	3.56	10.98	6.12	5.92	40.00	11.62	12.45	8.93	21.64	14.29	8.50	11.79	16.65	7.99	1.31	10.01	11.77	14.11	11.70	18.00	14.81	13.95
SWE	17.57	11.99	9.85	5.49	12.36	19.69	6.39	12.90	11.62	40.00	21.16	3.05	14.56	8.96	17.22	1.57	5.29	13.31	12.23	8.69	0.29	2.75	0.28	9.19	5.62	22.60
JSK	6.61	16.32	22.07	16.31	9.75	2.41	15.66	14.24	12.45	21.16	40.00	18.47	9.63	21.01	6.21	21.33	20.51	14.94	13.06	19.56	21.31	22.02	21.25	17.35	19.02	8.10
NAF	14.88	11.84	8.70	2.80	9.67	17.00	3.70	10.21	8.93	3.05	18.47	40.00	14.42	7.70	14.53	4.47	8.09	12.04	9.54	6.00	3.20	5.54	3.13	9.43	6.24	19.91
CEA	15.65	7.56	14.09	16.86	18.95	11.32	17.76	22.44	21.64	14.56	9.63	14.42	40.00	16.69	15.37	15.73	18.38	19.66	22.25	20.07	14.71	15.84	14.65	8.55	10.22	13.15
WAF	17.26	14.12	7.65	10.14	13.89	19.61	11.04	9.87	14.29	8.96	21.01	7.70	16.69	40.00	17.42	10.38	13.97	7.10	14.90	13.34	9.11	11.43	9.05	12.57	10.36	19.13
EAS	3.80	22.05	18.48	12.36	5.81	4.61	11.72	10.38	8.50	17.22	6.21	14.53	15.37	17.42	40.00	17.39	22.25	11.35	9.11	15.61	17.36	19.71	17.30	23.11	20.41	9.18
EAE	17.74	13.15	11.27	5.46	12.53	19.86	6.48	13.07	11.79	1.57	21.33	4.47	15.73	10.38	17.39	40.00	5.28	14.73	12.40	8.66	1.40	2.74	1.63	10.06	6.41	22.77
RUS	22.60	15.80	14.85	10.53	17.39	22.01	11.43	17.94	16.65	5.29	20.51	8.09	18.38	13.97	22.25	5.28	40.00	18.32	17.26	13.73	5.18	2.73	5.33	12.66	9.01	27.45
SAF	11.19	14.44	8.16	10.12	7.58	13.54	9.48	3.57	7.99	13.31	14.94	12.04	19.66	7.10	11.35	14.73	18.32	40.00	8.60	13.37	13.45	15.78	13.39	15.84	14.49	13.69
GLF	9.46	21.02	15.97	7.38	4.16	11.58	6.73	6.53	1.31	12.23	13.06	9.54	22.25	14.90	9.11	12.40	17.26	8.60	40.00	10.62	12.38	14.72	12.31	18.61	15.42	14.56
CAS	15.96	17.49	14.34	3.40	10.75	18.08	4.70	11.29	10.01	8.69	19.56	6.00	20.07	13.34	15.61	8.66	13.73	13.37	10.62	40.00	8.84	11.19	8.78	15.08	11.88	20.99
CEE	17.71	12.13	10.00	5.64	12.50	19.83	6.54	13.05	11.77	0.29	21.31	3.20	14.71	9.11	17.36	1.40	5.18	13.45	12.38	8.84	40.00	2.64	0.37	9.33	5.76	22.75
NOE	20.06	13.26	12.31	7.99	14.85	22.18	8.88	15.40	14.11	2.75	22.02	5.54	15.84	11.43	19.71	2.74	2.73	15.78	14.72	11.19	2.64	40.00	2.79	10.12	6.47	25.09
BRI	17.65	12.07	9.94	5.58	12.44	19.77	6.47	12.99	11.70	0.28	21.25	3.13	14.65	9.05	17.30	1.63	5.33	13.39	12.31	8.78	0.37	2.79	40.00	9.27	5.70	22.68
USA	23.30	5.97	10.27	11.88	18.74	19.06	12.77	18.62	18.00	9.19	17.35	9.43	8.55	12.57	23.11	10.06	12.66	15.84	18.61	15.08	9.33	10.12	9.27	40.00	4.46	18.63
CAN	20.76	7.64	9.56	8.68	15.55	20.72	9.58	16.09	14.81	5.62	19.02	6.24	10.22	10.36	20.41	6.41	9.01	14.49	15.42	11.88	5.76	6.47	5.70	4.46	40.00	20.29
ANZ	8.84	16.04	18.55	17.75	11.26	8.64	17.10	14.62	13.95	22.60	8.10	19.91	13.15	19.13	9.18	22.77	27.45	13.69	14.56	20.99	22.75	25.09	22.68	18.63	20.29	40.00

Source: Own depiction. Note: All distances are in kkm.

Table 22: Overview of Pipeline Distances

Start	PAC	SWA	SEA	SEE	IND	CHN	LEV	EAF	IRN	SWE	JSK	NAF	CEA	WAF	EAS	EAE	RUS	SAF	GLF	CAS	CEE	NOE	BRI	USA	CAN	ANZ
PAC	40.00	21.28	19.14	10.88	4.76	3.71	10.02	9.49	7.57	12.84	5.20	13.67	15.50	13.51	1.93	11.84	9.31	10.84	8.07	8.36	12.67	11.10	12.94	17.65	16.84	5.87
SWA	21.28	40.00	4.22	13.87	19.57	19.90	14.69	14.40	17.11	11.92	17.98	11.08	7.61	10.84	22.71	12.91	15.20	12.53	16.58	16.41	12.09	13.52	11.81	5.86	7.54	15.44
SEA	19.14	4.22	40.00	11.48	15.45	21.00	11.84	10.19	13.83	10.72	21.38	9.10	11.41	7.17	18.50	11.65	15.28	8.40	13.26	13.92	10.90	13.31	10.67	9.22	9.08	16.80
SEE	10.88	13.87	11.48	40.00	6.71	9.54	1.16	6.38	3.47	2.71	10.70	2.79	13.02	4.94	8.94	2.23	5.09	8.76	3.11	2.58	2.64	4.09	2.85	11.98	8.40	16.74
IND	4.76	19.57	15.45	6.71	40.00	6.03	5.65	5.29	3.25	9.23	8.05	9.39	17.43	8.79	3.14	8.39	7.83	7.54	3.62	4.65	9.11	8.79	9.36	17.94	14.76	10.31
CHN	3.71	19.90	21.00	9.54	6.03	40.00	9.16	11.30	7.23	10.52	2.03	12.01	12.30	13.87	3.38	9.55	6.16	13.49	7.79	7.08	10.33	8.11	10.58	14.13	13.24	7.88
LEV	10.02	14.69	11.84	1.16	5.65	9.16	40.00	5.42	2.47	3.86	10.57	3.74	14.12	4.87	8.10	3.32	5.58	7.95	2.04	2.10	3.79	4.95	4.00	13.13	9.55	15.86
EAF	9.49	14.40	10.19	6.38	5.29	11.30	5.42	40.00	5.15	8.80	13.31	7.57	19.07	4.54	8.32	8.58	10.72	2.76	4.79	6.54	8.80	10.37	8.92	17.13	13.84	13.46
IRN	7.57	17.11	13.83	3.47	3.25	7.23	2.47	5.15	40.00	6.00	8.95	6.20	15.43	6.65	5.67	5.20	5.75	7.90	0.57	1.68	5.88	6.04	6.13	15.06	11.62	13.39
SWE	12.84	11.92	10.72	2.71	9.23	10.52	3.86	8.80	6.00	40.00	11.01	1.95	10.41	5.97	10.96	1.01	4.65	10.81	5.74	4.66	0.18	2.81	0.14	9.27	5.70	18.38
JSK	5.20	17.98	21.38	10.70	8.05	2.03	10.57	13.31	8.95	11.01	40.00	12.78	10.43	15.43	5.34	10.15	6.36	15.51	9.50	8.48	10.83	8.29	11.04	12.45	12.30	7.66
NAF	13.67	11.08	9.10	2.79	9.39	12.01	3.74	7.57	6.20	1.95	12.78	40.00	11.50	4.10	11.73	2.65	6.50	9.19	5.78	5.33	2.10	4.75	1.99	9.89	6.34	19.53
CEA	15.50	7.61	11.41	13.02	17.43	12.30	14.12	19.07	15.43	10.41	10.43	11.50	40.00	14.80	15.67	10.81	9.81	19.50	15.50	13.76	10.44	9.43	10.28	2.40	5.25	13.28
WAF	13.51	10.84	7.17	4.94	8.79	13.87	4.87	4.54	6.65	5.97	15.43	4.10	14.80	40.00	11.89	6.35	9.96	5.26	6.09	6.95	6.07	8.57	6.03	12.63	9.61	17.96
EAS	1.93	22.71	18.50	8.94	3.14	3.38	8.10	8.32	5.67	10.96	5.34	11.73	15.67	11.89	40.00	9.97	7.82	10.20	6.19	6.43	10.79	9.45	11.07	17.33	15.48	7.80
EAE	11.84	12.91	11.65	2.23	8.39	9.55	3.32	8.58	5.20	1.01	10.15	2.65	10.81	6.35	9.97	40.00	3.85	10.84	5.01	3.75	0.83	2.22	1.10	9.92	6.42	17.39
RUS	9.31	15.20	15.28	5.09	7.83	6.16	5.58	10.72	5.75	4.65	6.36	6.50	9.81	9.96	7.82	3.85	40.00	13.43	5.99	4.19	4.48	1.97	4.68	10.17	7.67	13.93
SAF	10.84	12.53	8.40	8.76	7.54	13.49	7.95	2.76	7.90	10.81	15.51	9.19	19.50	5.26	10.20	10.84	13.43	40.00	7.54	9.28	10.86	12.85	10.91	17.10	14.75	12.99
GLF	8.07	16.58	13.26	3.11	3.62	7.79	2.04	4.79	0.57	5.74	9.50	5.78	15.50	6.09	6.19	5.01	5.99	7.54	40.00	1.81	5.64	6.08	5.88	14.93	11.42	13.86
CAS	8.36	16.41	13.92	2.58	4.65	7.08	2.10	6.54	1.68	4.66	8.48	5.33	13.76	6.95	6.43	3.75	4.19	9.28	1.81	40.00	4.52	4.37	4.78	13.45	10.11	14.21
CEE	12.67	12.09	10.90	2.64	9.11	10.33	3.79	8.80	5.88	0.18	10.83	2.10	10.44	6.07	10.79	0.83	4.48	10.86	5.64	4.52	40.00	2.66	0.28	9.35	5.79	18.20
NOE	11.10	13.52	13.31	4.09	8.79	8.11	4.95	10.37	6.04	2.81	8.29	4.75	9.43	8.57	9.45	2.22	1.97	12.85	6.08	4.37	2.66	40.00	2.81	9.17	6.14	15.90
BRI	12.94	11.81	10.67	2.85	9.36	10.58	4.00	8.92	6.13	0.14	11.04	1.99	10.28	6.03	11.07	1.10	4.68	10.91	5.88	4.78	0.28	2.81	40.00	9.13	5.56	18.45
USA	17.65	5.86	9.22	11.98	17.94	14.13	13.13	17.13	15.06	9.27	12.45	9.89	2.40	12.63	17.33	9.92	10.17	17.10	14.93	13.45	9.35	9.17	9.13	40.00	3.60	15.47
CAN	16.84	7.54	9.08	8.40	14.76	13.24	9.55	13.84	11.62	5.70	12.30	6.34	5.25	9.61	15.48	6.42	7.67	14.75	11.42	10.11	5.79	6.14	5.56	3.60	40.00	18.29
ANZ	5.87	15.44	16.80	16.74	10.31	7.88	15.86	13.46	13.39	18.38	7.66	19.53	13.28	17.96	7.80	17.39	13.93	12.99	13.86	14.21	18.20	15.90	18.45	15.47	18.29	40.00

Source: Own depiction. Note: All distances are in kkm.

Table 23: Overview of Shipping Adjacency Structures

Start	PAC	SWA	SEA	SEE	IND	CHN	LEV	EAF	IRN	SWE	JSK	NAF	CEA	WAF	EAS	EAE	RUS	SAF	GLF	CAS	CEE	NOE	BRI	USA	CAN	ANZ
PAC		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
SWA	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
SEA	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
SEE	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
IND	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
CHN	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
LEV	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
EAF	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
IRN	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
SWE	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
JSK	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1		1	1	1	1	1	1
NAF	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1	1	1	1	1
CEA	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1		1	1	1	1	1	1
WAF	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1		1	1	1	1	1	1
EAS	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1		1	1	1	1	1	1
EAE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1		1	1	1	1	1	1
RUS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1	1	1	1
SAF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1		1	1	1	1	1	1
GLF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1
CAS																										
CEE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	1
NOE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1		1	1	1	1
BRI	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
USA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1		1	1
CAN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1		1
ANZ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	

Source: Own depiction.

Table 24: Overview of Pipeline Adjacency Structures

Start	PAC	SWA	SEA	SEE	IND	CHN	LEV	EAF	IRN	SWE	JSK	NAF	CEA	WAF	EAS	EAE	RUS	SAF	GLF	CAS	CEE	NOE	BRI	USA	CAN	ANZ
PAC																										
SWA			1										1													
SEA		1																								
SEE							1		1							1	1				1					
IND									1						1											
CHN															1		1			1						
LEV				1				1	1			1							1							
EAF							1					1		1				1	1							
IRN				1	1		1										1		1	1						
SWE				1								1									1		1			
JSK																										
NAF							1	1		1				1												
CEA		1																						1		
WAF								1				1						1								
EAS					1	1																				
EAE				1													1				1	1				
RUS				1		1			1							1				1	1	1				
SAF								1						1												
GLF							1	1	1																	
CAS						1			1								1									
CEE				1						1						1	1					1	1			
NOE																1	1				1		1			
BRI										1											1	1				
USA													1												1	
CAN																								1		
ANZ																										

Source: Own depiction.

3 Renewable Potential Analysis

3.1 Renewable Hydrogen Capacity and Cost Assumptions

3.1.1 Renewable Investment Base Cost

Table 25 depicts base renewable investment cost, roughly following IEA (2022) and IRENA (2023).

Table 25: Renewable Base Invest Cost Assumptions

Plant	**Year**	**Base Invest**
PV Plant A	2020	1 000 000
PV Plant B	2020	1 100 000
PV Rooftop	2020	1 100 000
Wind Onshore A	2020	1 250 000
Wind Onshore B	2020	1 300 000
Wind Offshore	2020	3 000 000
Hydropower	2020	2 000 000
PV Plant A	2030	500 000
PV Plant B	2030	550 000
PV Rooftop	2030	550 000
Wind Onshore A	2030	1 050 000
Wind Onshore B	2030	1 100 000
Wind Offshore	2030	2 000 000
Hydropower	2030	2 000 000
PV Plant A	2050	300 000
PV Plant B	2050	330 000
PV Rooftop	2050	330 000
Wind Onshore A	2050	800 000
Wind Onshore B	2050	900 000
Wind Offshore	2050	1 250 000
Hydropower	2050	2 000 000

Source: Own depiction. Note: Units are €/MW.

3.1.2 Renewable Hydrogen Capacity and Cost Assumptions

Table 26 shows residual capacities after satisfying domestic demand, as well as aggregate (power generation and electrolyzer) investment and operational cost assumptions.

Table 26: Renewable Hydrogen Capacity and Cost Assumptions

Region	Block	Capacity	Investment	Operational
PAC	PV Plant A Block 1 2020	0	72 916.667	0
SWA	PV Plant A Block 1 2020	1.72	66 666.667	61.502
SEA	PV Plant A Block 1 2020	24.907	66 666.667	58.844
SEE	PV Plant A Block 1 2020	0	72 916.667	0
IND	PV Plant A Block 1 2020	0	58 333.333	0
CHN	PV Plant A Block 1 2020	0.305	60 416.667	53.012
LEV	PV Plant A Block 1 2020	0	58 333.333	0
EAF	PV Plant A Block 1 2020	0	83 333.333	0
IRN	PV Plant A Block 1 2020	0	81 250	0
SWE	PV Plant A Block 1 2020	0	64 583.333	0
JSK	PV Plant A Block 1 2020	0	110 416.667	0
NAF	PV Plant A Block 1 2020	0	81 250	0
CEA	PV Plant A Block 1 2020	0	72 916.667	0
WAF	PV Plant A Block 1 2020	0	83 333.333	0
EAS	PV Plant A Block 1 2020	0	72 916.667	0
EAE	PV Plant A Block 1 2020	0.004	72 916.667	58.517
RUS	PV Plant A Block 1 2020	2.295	102 083.333	80.274
SAF	PV Plant A Block 1 2020	2.133	77 083.333	62.209
GLF	PV Plant A Block 1 2020	0	58 333.333	0
CAS	PV Plant A Block 1 2020	0	81 250	0
CEE	PV Plant A Block 1 2020	0	72 916.667	0
NOE	PV Plant A Block 1 2020	3.229	72 916.667	67.377

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
BRI	PV Plant A Block 1 2020	5.143	68 750	59.469
USA	PV Plant A Block 1 2020	0.538	77 083.333	66.197
CAN	PV Plant A Block 1 2020	0.253	70 833.333	60.25
ANZ	PV Plant A Block 1 2020	10.222	64 583.333	62.445
PAC	PV Plant B Block 1 2020	0.005	77 083.333	61.394
SWA	PV Plant B Block 1 2020	1.772	70 208.333	76.397
SEA	PV Plant B Block 1 2020	53.497	70 208.333	65.297
SEE	PV Plant B Block 1 2020	0	77 083.333	0
IND	PV Plant B Block 1 2020	0	61 041.667	0
CHN	PV Plant B Block 1 2020	0	63 333.333	0
LEV	PV Plant B Block 1 2020	0	61 041.667	0
EAF	PV Plant B Block 1 2020	0	88 541.667	0
IRN	PV Plant B Block 1 2020	0	86 250	0
SWE	PV Plant B Block 1 2020	0	67 916.667	0
JSK	PV Plant B Block 1 2020	0	118 333.333	0
NAF	PV Plant B Block 1 2020	0	86 250	0
CEA	PV Plant B Block 1 2020	0	77 083.333	0
WAF	PV Plant B Block 1 2020	0	88 541.667	0
EAS	PV Plant B Block 1 2020	0	77 083.333	0
EAE	PV Plant B Block 1 2020	0	77 083.333	0
RUS	PV Plant B Block 1 2020	39.762	109 166.667	86.635
SAF	PV Plant B Block 1 2020	0.175	81 666.667	63.586
GLF	PV Plant B Block 1 2020	0	61 041.667	0
CAS	PV Plant B Block 1 2020	0	86 250	0
CEE	PV Plant B Block 1 2020	0	77 083.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
NOE	PV Plant B Block 1 2020	13.632	77 083.333	75.063
BRI	PV Plant B Block 1 2020	0.975	72 500	65.524
USA	PV Plant B Block 1 2020	3.648	81 666.667	74.95
CAN	PV Plant B Block 1 2020	7.569	74 791.667	62.984
ANZ	PV Plant B Block 1 2020	17.453	67 916.667	67.001
PAC	PV Rooftop Block 1 2020	0	77 083.333	0
SWA	PV Rooftop Block 1 2020	0.186	70 208.333	62.692
SEA	PV Rooftop Block 1 2020	0.774	70 208.333	59.207
SEE	PV Rooftop Block 1 2020	0	77 083.333	0
IND	PV Rooftop Block 1 2020	0	61 041.667	0
CHN	PV Rooftop Block 1 2020	3.126	63 333.333	54.705
LEV	PV Rooftop Block 1 2020	0	61 041.667	0
EAF	PV Rooftop Block 1 2020	0	88 541.667	0
IRN	PV Rooftop Block 1 2020	0	86 250	0
SWE	PV Rooftop Block 1 2020	0	67 916.667	0
JSK	PV Rooftop Block 1 2020	0	118 333.333	0
NAF	PV Rooftop Block 1 2020	0	86 250	0
CEA	PV Rooftop Block 1 2020	0	77 083.333	0
WAF	PV Rooftop Block 1 2020	0	88 541.667	0
EAS	PV Rooftop Block 1 2020	0	77 083.333	0
EAE	PV Rooftop Block 1 2020	0.003	77 083.333	60.969
RUS	PV Rooftop Block 1 2020	0.306	109 166.667	83.334
SAF	PV Rooftop Block 1 2020	0.472	81 666.667	65.142
GLF	PV Rooftop Block 1 2020	0	61 041.667	0
CAS	PV Rooftop Block 1 2020	0	86 250	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CEE	PV Rooftop Block 1 2020	0	77 083.333	0
NOE	PV Rooftop Block 1 2020	0.18	77 083.333	64.656
BRI	PV Rooftop Block 1 2020	0.81	72 500	60.305
USA	PV Rooftop Block 1 2020	0.013	81 666.667	64.455
CAN	PV Rooftop Block 1 2020	0	74 791.667	0
ANZ	PV Rooftop Block 1 2020	0.689	67 916.667	64.463
PAC	Wind Onshore A Block 1 2020	11.937	85 937.5	159.89
SWA	Wind Onshore A Block 1 2020	10.358	78 125	115.152
SEA	Wind Onshore A Block 1 2020	17.851	78 125	96.304
SEE	Wind Onshore A Block 1 2020	5.184	93 750	93.302
IND	Wind Onshore A Block 1 2020	4.232	78 125	91.597
CHN	Wind Onshore A Block 1 2020	13.325	78 125	81.131
LEV	Wind Onshore A Block 1 2020	0.198	83 333.333	65.27
EAF	Wind Onshore A Block 1 2020	9.571	96 354.167	104.05
IRN	Wind Onshore A Block 1 2020	5.138	93 750	84.788
SWE	Wind Onshore A Block 1 2020	2.149	91 145.833	79.652
JSK	Wind Onshore A Block 1 2020	0.899	98 958.333	75.658
NAF	Wind Onshore A Block 1 2020	1.186	93 750	68.936
CEA	Wind Onshore A Block 1 2020	9.186	91 145.833	106.37
WAF	Wind Onshore A Block 1 2020	19.395	96 354.167	117.752
EAS	Wind Onshore A Block 1 2020	7.885	83 333.333	104.844
EAE	Wind Onshore A Block 1 2020	0.846	88 541.667	84.042
RUS	Wind Onshore A Block 1 2020	2.008	109 375	105.497
SAF	Wind Onshore A Block 1 2020	2	88 541.667	71.412
GLF	Wind Onshore A Block 1 2020	1.561	83 333.333	69.448

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CAS	Wind Onshore A Block 1 2020	3.256	96 354.167	96.358
CEE	Wind Onshore A Block 1 2020	0.427	93 750	95.978
NOE	Wind Onshore A Block 1 2020	0.238	96 354.167	79.089
BRI	Wind Onshore A Block 1 2020	0	93 750	61.646
USA	Wind Onshore A Block 1 2020	8.528	83 333.333	69.883
CAN	Wind Onshore A Block 1 2020	0.858	83 333.333	80.831
ANZ	Wind Onshore A Block 1 2020	0.883	78 125	64.976
PAC	Wind Onshore B Block 1 2020	10.442	88 125	173.982
SWA	Wind Onshore B Block 1 2020	16.778	80 000	116.18
SEA	Wind Onshore B Block 1 2020	38.849	80 000	117.213
SEE	Wind Onshore B Block 1 2020	0.005	96 250	126.713
IND	Wind Onshore B Block 1 2020	0.963	80 000	121.377
CHN	Wind Onshore B Block 1 2020	6.887	80 000	69.133
LEV	Wind Onshore B Block 1 2020	0.042	85 416.667	61.133
EAF	Wind Onshore B Block 1 2020	26.897	98 958.333	93.829
IRN	Wind Onshore B Block 1 2020	1.943	96 250	74.413
SWE	Wind Onshore B Block 1 2020	0	93 541.667	51.757
JSK	Wind Onshore B Block 1 2020	0	101 666.667	0
NAF	Wind Onshore B Block 1 2020	0.029	96 250	54.617
CEA	Wind Onshore B Block 1 2020	6.297	93 541.667	92.686
WAF	Wind Onshore B Block 1 2020	43.15	98 958.333	146.734
EAS	Wind Onshore B Block 1 2020	3.844	85 416.667	157.524
EAE	Wind Onshore B Block 1 2020	0	90 833.333	0
RUS	Wind Onshore B Block 1 2020	10.264	112 500	88.427
SAF	Wind Onshore B Block 1 2020	1.042	90 833.333	63.657

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
GLF	Wind Onshore B Block 1 2020	0.637	85 416.667	68.347
CAS	Wind Onshore B Block 1 2020	4.329	98 958.333	88.991
CEE	Wind Onshore B Block 1 2020	0	96 250	0
NOE	Wind Onshore B Block 1 2020	0.29	98 958.333	77.19
BRI	Wind Onshore B Block 1 2020	0	96 250	0
USA	Wind Onshore B Block 1 2020	2.376	85 416.667	67.048
CAN	Wind Onshore B Block 1 2020	5.777	85 416.667	74.362
ANZ	Wind Onshore B Block 1 2020	2.174	80 000	63.608
PAC	Wind Offshore Block 1 2020	50.877	162 500	173.49
SWA	Wind Offshore Block 1 2020	1.161	143 750	98.342
SEA	Wind Offshore Block 1 2020	5.856	143 750	118.354
SEE	Wind Offshore Block 1 2020	0.412	181 250	98.37
IND	Wind Offshore Block 1 2020	4.246	143 750	106.609
CHN	Wind Offshore Block 1 2020	0.321	143 750	70.619
LEV	Wind Offshore Block 1 2020	0.443	156 250	80.873
EAF	Wind Offshore Block 1 2020	9.012	187 500	114.195
IRN	Wind Offshore Block 1 2020	1.493	181 250	91.803
SWE	Wind Offshore Block 1 2020	0.793	175 000	85.231
JSK	Wind Offshore Block 1 2020	0.166	193 750	90.591
NAF	Wind Offshore Block 1 2020	0.058	181 250	80.295
CEA	Wind Offshore Block 1 2020	2.919	175 000	98.949
WAF	Wind Offshore Block 1 2020	8.36	187 500	206.779
EAS	Wind Offshore Block 1 2020	17.706	156 250	149.866
EAE	Wind Offshore Block 1 2020	0	168 750	62.67
RUS	Wind Offshore Block 1 2020	0.619	218 750	87.832

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	**Block**	**Capacity**	**Investment**	**Operational**
SAF	Wind Offshore Block 1 2020	0.054	168 750	76.294
GLF	Wind Offshore Block 1 2020	5.887	156 250	100.288
CAS	Wind Offshore Block 1 2020	0.595	187 500	90.688
CEE	Wind Offshore Block 1 2020	0.002	181 250	117.256
NOE	Wind Offshore Block 1 2020	0.005	187 500	79.27
BRI	Wind Offshore Block 1 2020	0	181 250	0
USA	Wind Offshore Block 1 2020	1.079	156 250	150.701
CAN	Wind Offshore Block 1 2020	0.008	156 250	71.811
ANZ	Wind Offshore Block 1 2020	2.207	143 750	77.651
PAC	PV Plant A Block 2 2020	0.603	72 916.667	48.71
SWA	PV Plant A Block 2 2020	7.127	66 666.667	46.653
SEA	PV Plant A Block 2 2020	82.902	66 666.667	48.645
SEE	PV Plant A Block 2 2020	1.359	72 916.667	46.479
IND	PV Plant A Block 2 2020	0.071	58 333.333	41.116
CHN	PV Plant A Block 2 2020	6.06	60 416.667	43.125
LEV	PV Plant A Block 2 2020	0	58 333.333	0
EAF	PV Plant A Block 2 2020	2.998	83 333.333	52.978
IRN	PV Plant A Block 2 2020	0	81 250	0
SWE	PV Plant A Block 2 2020	10.344	64 583.333	43.32
JSK	PV Plant A Block 2 2020	1.029	110 416.667	63.302
NAF	PV Plant A Block 2 2020	0	81 250	0
CEA	PV Plant A Block 2 2020	0.676	72 916.667	46.211
WAF	PV Plant A Block 2 2020	1.139	83 333.333	52.052
EAS	PV Plant A Block 2 2020	0.801	72 916.667	49.476
EAE	PV Plant A Block 2 2020	43.836	72 916.667	49.115

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
RUS	PV Plant A Block 2 2020	65.835	102 083.333	63.963
SAF	PV Plant A Block 2 2020	21.267	77 083.333	51.729
GLF	PV Plant A Block 2 2020	0	58 333.333	0
CAS	PV Plant A Block 2 2020	4.027	81 250	52.778
CEE	PV Plant A Block 2 2020	10.664	72 916.667	48.742
NOE	PV Plant A Block 2 2020	3.806	72 916.667	53.364
BRI	PV Plant A Block 2 2020	3.971	68 750	52.254
USA	PV Plant A Block 2 2020	6.933	77 083.333	50.012
CAN	PV Plant A Block 2 2020	6.747	70 833.333	47.148
ANZ	PV Plant A Block 2 2020	8.204	64 583.333	49.474
PAC	PV Plant B Block 2 2020	1.809	77 083.333	50.461
SWA	PV Plant B Block 2 2020	4.991	70 208.333	45.903
SEA	PV Plant B Block 2 2020	54.482	70 208.333	50.536
SEE	PV Plant B Block 2 2020	0	77 083.333	0
IND	PV Plant B Block 2 2020	0.241	61 041.667	42.176
CHN	PV Plant B Block 2 2020	0.041	63 333.333	42.19
LEV	PV Plant B Block 2 2020	0	61 041.667	0
EAF	PV Plant B Block 2 2020	6.924	88 541.667	54.117
IRN	PV Plant B Block 2 2020	0	86 250	0
SWE	PV Plant B Block 2 2020	0	67 916.667	0
JSK	PV Plant B Block 2 2020	0	118 333.333	0
NAF	PV Plant B Block 2 2020	0	86 250	0
CEA	PV Plant B Block 2 2020	0.171	77 083.333	48.047
WAF	PV Plant B Block 2 2020	1.232	88 541.667	54.325
EAS	PV Plant B Block 2 2020	0.039	77 083.333	50.581

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAE	PV Plant B Block 2 2020	1.234	77 083.333	50.946
RUS	PV Plant B Block 2 2020	73.581	109 166.667	68.437
SAF	PV Plant B Block 2 2020	20.209	81 666.667	52.526
GLF	PV Plant B Block 2 2020	0	61 041.667	0
CAS	PV Plant B Block 2 2020	31.25	86 250	54.711
CEE	PV Plant B Block 2 2020	0	77 083.333	0
NOE	PV Plant B Block 2 2020	3.142	77 083.333	57.308
BRI	PV Plant B Block 2 2020	0.07	72 500	57.382
USA	PV Plant B Block 2 2020	4.912	81 666.667	59.4
CAN	PV Plant B Block 2 2020	53.147	74 791.667	51.79
ANZ	PV Plant B Block 2 2020	62.835	67 916.667	48.824
PAC	PV Rooftop Block 2 2020	0.085	77 083.333	48.125
SWA	PV Rooftop Block 2 2020	0.943	70 208.333	48.766
SEA	PV Rooftop Block 2 2020	4.04	70 208.333	49.609
SEE	PV Rooftop Block 2 2020	0.203	77 083.333	48.877
IND	PV Rooftop Block 2 2020	0.279	61 041.667	41.771
CHN	PV Rooftop Block 2 2020	33.435	63 333.333	45.448
LEV	PV Rooftop Block 2 2020	0	61 041.667	0
EAF	PV Rooftop Block 2 2020	0.5	88 541.667	55.971
IRN	PV Rooftop Block 2 2020	0	86 250	0
SWE	PV Rooftop Block 2 2020	1.43	67 916.667	45.148
JSK	PV Rooftop Block 2 2020	0.687	118 333.333	67.005
NAF	PV Rooftop Block 2 2020	0	86 250	0
CEA	PV Rooftop Block 2 2020	0.001	77 083.333	47.414
WAF	PV Rooftop Block 2 2020	1.715	88 541.667	53.529

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAS	PV Rooftop Block 2 2020	2.127	77 083.333	53.323
EAE	PV Rooftop Block 2 2020	3.821	77 083.333	50.749
RUS	PV Rooftop Block 2 2020	2.813	109 166.667	69.04
SAF	PV Rooftop Block 2 2020	1.148	81 666.667	55.091
GLF	PV Rooftop Block 2 2020	0	61 041.667	0
CAS	PV Rooftop Block 2 2020	0.105	86 250	54.58
CEE	PV Rooftop Block 2 2020	5.36	77 083.333	50.446
NOE	PV Rooftop Block 2 2020	0.753	77 083.333	54.707
BRI	PV Rooftop Block 2 2020	1.888	72 500	53.837
USA	PV Rooftop Block 2 2020	1.469	81 666.667	50.79
CAN	PV Rooftop Block 2 2020	0.637	74 791.667	47.67
ANZ	PV Rooftop Block 2 2020	0.244	67 916.667	49.974
PAC	Wind Onshore A Block 2 2020	0.457	85 937.5	43.069
SWA	Wind Onshore A Block 2 2020	1.861	78 125	40.69
SEA	Wind Onshore A Block 2 2020	10.89	78 125	45.545
SEE	Wind Onshore A Block 2 2020	2.752	93 750	47.334
IND	Wind Onshore A Block 2 2020	1.562	78 125	44.919
CHN	Wind Onshore A Block 2 2020	7.366	78 125	39.953
LEV	Wind Onshore A Block 2 2020	0.514	83 333.333	41.24
EAF	Wind Onshore A Block 2 2020	4.484	96 354.167	47.77
IRN	Wind Onshore A Block 2 2020	3.512	93 750	44.388
SWE	Wind Onshore A Block 2 2020	2.757	91 145.833	44.107
JSK	Wind Onshore A Block 2 2020	0.938	98 958.333	47.122
NAF	Wind Onshore A Block 2 2020	1.443	93 750	41.209
CEA	Wind Onshore A Block 2 2020	3.024	91 145.833	46.729

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
WAF	Wind Onshore A Block 2 2020	5.155	96 354.167	51.131
EAS	Wind Onshore A Block 2 2020	1.592	83 333.333	43.912
EAE	Wind Onshore A Block 2 2020	1.489	88 541.667	46.241
RUS	Wind Onshore A Block 2 2020	2.214	109 375	50.409
SAF	Wind Onshore A Block 2 2020	3.68	88 541.667	42.227
GLF	Wind Onshore A Block 2 2020	2.867	83 333.333	39.07
CAS	Wind Onshore A Block 2 2020	1.695	96 354.167	43.686
CEE	Wind Onshore A Block 2 2020	0.58	93 750	48.391
NOE	Wind Onshore A Block 2 2020	0.78	96 354.167	47.437
BRI	Wind Onshore A Block 2 2020	0.001	93 750	40.849
USA	Wind Onshore A Block 2 2020	14.413	83 333.333	41.554
CAN	Wind Onshore A Block 2 2020	1.509	83 333.333	40.583
ANZ	Wind Onshore A Block 2 2020	1.466	78 125	39.239
PAC	Wind Onshore B Block 2 2020	0.342	88 125	44.454
SWA	Wind Onshore B Block 2 2020	3.44	80 000	42.814
SEA	Wind Onshore B Block 2 2020	12.258	80 000	44.052
SEE	Wind Onshore B Block 2 2020	0.001	96 250	38.338
IND	Wind Onshore B Block 2 2020	0.614	80 000	44.774
CHN	Wind Onshore B Block 2 2020	8.349	80 000	39.077
LEV	Wind Onshore B Block 2 2020	0.639	85 416.667	42.868
EAF	Wind Onshore B Block 2 2020	16.743	98 958.333	48.44
IRN	Wind Onshore B Block 2 2020	2.837	96 250	44.639
SWE	Wind Onshore B Block 2 2020	0.001	93 541.667	44.704
JSK	Wind Onshore B Block 2 2020	0	101 666.667	0
NAF	Wind Onshore B Block 2 2020	0.68	96 250	39.54

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CEA	Wind Onshore B Block 2 2020	3.34	93 541.667	47.386
WAF	Wind Onshore B Block 2 2020	7.086	98 958.333	48.909
EAS	Wind Onshore B Block 2 2020	0.314	85 416.667	43.034
EAE	Wind Onshore B Block 2 2020	0.007	90 833.333	49.108
RUS	Wind Onshore B Block 2 2020	17.117	112 500	52.558
SAF	Wind Onshore B Block 2 2020	6.708	90 833.333	42.644
GLF	Wind Onshore B Block 2 2020	2.18	85 416.667	41.233
CAS	Wind Onshore B Block 2 2020	3.985	98 958.333	44.743
CEE	Wind Onshore B Block 2 2020	0	96 250	0
NOE	Wind Onshore B Block 2 2020	1.785	98 958.333	48.939
BRI	Wind Onshore B Block 2 2020	0	96 250	41.057
USA	Wind Onshore B Block 2 2020	3.729	85 416.667	41.132
CAN	Wind Onshore B Block 2 2020	10.874	85 416.667	42.424
ANZ	Wind Onshore B Block 2 2020	5.9	80 000	40.245
PAC	Wind Offshore Block 2 2020	4.445	162 500	56.061
SWA	Wind Offshore Block 2 2020	0.248	143 750	103.148
SEA	Wind Offshore Block 2 2020	7.84	143 750	118.097
SEE	Wind Offshore Block 2 2020	0.227	181 250	53.876
IND	Wind Offshore Block 2 2020	4.25	143 750	67.42
CHN	Wind Offshore Block 2 2020	1.806	143 750	45.979
LEV	Wind Offshore Block 2 2020	0.317	156 250	60.33
EAF	Wind Offshore Block 2 2020	2.422	187 500	75.454
IRN	Wind Offshore Block 2 2020	1.523	181 250	102.3
SWE	Wind Offshore Block 2 2020	0.473	175 000	55.644
JSK	Wind Offshore Block 2 2020	1.006	193 750	56.275

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
NAF	Wind Offshore Block 2 2020	0.091	181 250	54.74
CEA	Wind Offshore Block 2 2020	9.136	175 000	68.993
WAF	Wind Offshore Block 2 2020	0.752	187 500	79.542
EAS	Wind Offshore Block 2 2020	2.794	156 250	84.5
EAE	Wind Offshore Block 2 2020	0.011	168 750	46.878
RUS	Wind Offshore Block 2 2020	0.857	218 750	62.462
SAF	Wind Offshore Block 2 2020	0.015	168 750	52.685
GLF	Wind Offshore Block 2 2020	3.072	156 250	76.669
CAS	Wind Offshore Block 2 2020	0.437	187 500	51.422
CEE	Wind Offshore Block 2 2020	0	181 250	59.203
NOE	Wind Offshore Block 2 2020	0.02	187 500	58.937
BRI	Wind Offshore Block 2 2020	0	181 250	52.46
USA	Wind Offshore Block 2 2020	6.021	156 250	88.989
CAN	Wind Offshore Block 2 2020	0.171	156 250	45.281
ANZ	Wind Offshore Block 2 2020	1.122	143 750	57.104
PAC	PV Plant A Block 3 2020	11.936	72 916.667	40.538
SWA	PV Plant A Block 3 2020	23.961	66 666.667	37.759
SEA	PV Plant A Block 3 2020	76.265	66 666.667	38.211
SEE	PV Plant A Block 3 2020	17.08	72 916.667	41.232
IND	PV Plant A Block 3 2020	1.231	58 333.333	33.547
CHN	PV Plant A Block 3 2020	37.695	60 416.667	34.535
LEV	PV Plant A Block 3 2020	0	58 333.333	0
EAF	PV Plant A Block 3 2020	25.283	83 333.333	43.425
IRN	PV Plant A Block 3 2020	1.573	81 250	42.377
SWE	PV Plant A Block 3 2020	18.962	64 583.333	38.329

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
JSK	PV Plant A Block 3 2020	1.571	110 416.667	56.397
NAF	PV Plant A Block 3 2020	0	81 250	0
CEA	PV Plant A Block 3 2020	9.417	72 916.667	39.861
WAF	PV Plant A Block 3 2020	16.59	83 333.333	44.166
EAS	PV Plant A Block 3 2020	19.355	72 916.667	38.894
EAE	PV Plant A Block 3 2020	9.824	72 916.667	43.947
RUS	PV Plant A Block 3 2020	25.767	102 083.333	54.331
SAF	PV Plant A Block 3 2020	24.561	77 083.333	44.001
GLF	PV Plant A Block 3 2020	0	58 333.333	0
CAS	PV Plant A Block 3 2020	6.131	81 250	44.023
CEE	PV Plant A Block 3 2020	1.24	72 916.667	42.9
NOE	PV Plant A Block 3 2020	0	72 916.667	0
BRI	PV Plant A Block 3 2020	0	68 750	0
USA	PV Plant A Block 3 2020	113.184	77 083.333	41.754
CAN	PV Plant A Block 3 2020	28.819	70 833.333	40.01
ANZ	PV Plant A Block 3 2020	1.575	64 583.333	38.516
PAC	PV Plant B Block 3 2020	2.817	77 083.333	44.149
SWA	PV Plant B Block 3 2020	22.81	70 208.333	39.807
SEA	PV Plant B Block 3 2020	126.863	70 208.333	39.727
SEE	PV Plant B Block 3 2020	0	77 083.333	0
IND	PV Plant B Block 3 2020	0.739	61 041.667	37.31
CHN	PV Plant B Block 3 2020	13.424	63 333.333	35.079
LEV	PV Plant B Block 3 2020	0	61 041.667	0
EAF	PV Plant B Block 3 2020	89.062	88 541.667	45.704
IRN	PV Plant B Block 3 2020	0	86 250	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SWE	PV Plant B Block 3 2020	0.012	67 916.667	36.743
JSK	PV Plant B Block 3 2020	0	118 333.333	0
NAF	PV Plant B Block 3 2020	0	86 250	0
CEA	PV Plant B Block 3 2020	1.699	77 083.333	42.29
WAF	PV Plant B Block 3 2020	15.94	88 541.667	43.904
EAS	PV Plant B Block 3 2020	0.944	77 083.333	42.52
EAE	PV Plant B Block 3 2020	0.299	77 083.333	45.266
RUS	PV Plant B Block 3 2020	59.077	109 166.667	56.683
SAF	PV Plant B Block 3 2020	69.401	81 666.667	43.738
GLF	PV Plant B Block 3 2020	0	61 041.667	0
CAS	PV Plant B Block 3 2020	69.611	86 250	46.331
CEE	PV Plant B Block 3 2020	0	77 083.333	0
NOE	PV Plant B Block 3 2020	0	77 083.333	0
BRI	PV Plant B Block 3 2020	0	72 500	0
USA	PV Plant B Block 3 2020	4.669	81 666.667	40.877
CAN	PV Plant B Block 3 2020	20.237	74 791.667	42.195
ANZ	PV Plant B Block 3 2020	26.297	67 916.667	39.313
PAC	PV Rooftop Block 3 2020	13.873	77 083.333	41.177
SWA	PV Rooftop Block 3 2020	1.868	70 208.333	39.524
SEA	PV Rooftop Block 3 2020	2.241	70 208.333	39.148
SEE	PV Rooftop Block 3 2020	2.391	77 083.333	42.736
IND	PV Rooftop Block 3 2020	12.228	61 041.667	34.676
CHN	PV Rooftop Block 3 2020	47.684	63 333.333	36.499
LEV	PV Rooftop Block 3 2020	0	61 041.667	0
EAF	PV Rooftop Block 3 2020	7.946	88 541.667	44.906

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
IRN	PV Rooftop Block 3 2020	0.464	86 250	45.416
SWE	PV Rooftop Block 3 2020	4.748	67 916.667	39.539
JSK	PV Rooftop Block 3 2020	5.661	118 333.333	60.339
NAF	PV Rooftop Block 3 2020	0	86 250	0
CEA	PV Rooftop Block 3 2020	1.25	77 083.333	41.118
WAF	PV Rooftop Block 3 2020	8.92	88 541.667	46.816
EAS	PV Rooftop Block 3 2020	16.954	77 083.333	40.535
EAE	PV Rooftop Block 3 2020	0.676	77 083.333	45.573
RUS	PV Rooftop Block 3 2020	1.123	109 166.667	56.96
SAF	PV Rooftop Block 3 2020	0.717	81 666.667	47.712
GLF	PV Rooftop Block 3 2020	0	61 041.667	0
CAS	PV Rooftop Block 3 2020	0.748	86 250	43.845
CEE	PV Rooftop Block 3 2020	0.331	77 083.333	46.035
NOE	PV Rooftop Block 3 2020	0	77 083.333	0
BRI	PV Rooftop Block 3 2020	0	72 500	0
USA	PV Rooftop Block 3 2020	9.199	81 666.667	45.022
CAN	PV Rooftop Block 3 2020	0.788	74 791.667	43.511
ANZ	PV Rooftop Block 3 2020	0.046	67 916.667	40.867
PAC	Wind Onshore A Block 3 2020	0.159	85 937.5	30.812
SWA	Wind Onshore A Block 3 2020	1.136	78 125	30.21
SEA	Wind Onshore A Block 3 2020	10.468	78 125	29.817
SEE	Wind Onshore A Block 3 2020	1.404	93 750	34.386
IND	Wind Onshore A Block 3 2020	0.443	78 125	31.087
CHN	Wind Onshore A Block 3 2020	6.601	78 125	28.423
LEV	Wind Onshore A Block 3 2020	0.967	83 333.333	30.391

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAF	Wind Onshore A Block 3 2020	3.343	96 354.167	33.696
IRN	Wind Onshore A Block 3 2020	3.637	93 750	32.682
SWE	Wind Onshore A Block 3 2020	2.585	91 145.833	33.248
JSK	Wind Onshore A Block 3 2020	0.522	98 958.333	34.708
NAF	Wind Onshore A Block 3 2020	1.977	93 750	30.871
CEA	Wind Onshore A Block 3 2020	1.574	91 145.833	33.025
WAF	Wind Onshore A Block 3 2020	3.687	96 354.167	37.05
EAS	Wind Onshore A Block 3 2020	0.559	83 333.333	29.435
EAE	Wind Onshore A Block 3 2020	4.58	88 541.667	33.728
RUS	Wind Onshore A Block 3 2020	9.364	109 375	38.085
SAF	Wind Onshore A Block 3 2020	2.829	88 541.667	31.269
GLF	Wind Onshore A Block 3 2020	7.882	83 333.333	29.824
CAS	Wind Onshore A Block 3 2020	1.915	96 354.167	32.725
CEE	Wind Onshore A Block 3 2020	0.92	93 750	35.987
NOE	Wind Onshore A Block 3 2020	2.627	96 354.167	36.161
BRI	Wind Onshore A Block 3 2020	0.039	93 750	31.352
USA	Wind Onshore A Block 3 2020	14.743	83 333.333	30.535
CAN	Wind Onshore A Block 3 2020	4.736	83 333.333	30.03
ANZ	Wind Onshore A Block 3 2020	2.154	78 125	28.251
PAC	Wind Onshore B Block 3 2020	0.1	88 125	32.773
SWA	Wind Onshore B Block 3 2020	1.698	80 000	30.8
SEA	Wind Onshore B Block 3 2020	9.496	80 000	30.123
SEE	Wind Onshore B Block 3 2020	0.001	96 250	30.673
IND	Wind Onshore B Block 3 2020	0.335	80 000	30.844
CHN	Wind Onshore B Block 3 2020	7.156	80 000	28.438

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
LEV	Wind Onshore B Block 3 2020	1.452	85 416.667	31.416
EAF	Wind Onshore B Block 3 2020	11.66	98 958.333	34.678
IRN	Wind Onshore B Block 3 2020	3.464	96 250	33.252
SWE	Wind Onshore B Block 3 2020	0.002	93 541.667	34.125
JSK	Wind Onshore B Block 3 2020	0	101 666.667	0
NAF	Wind Onshore B Block 3 2020	2.622	96 250	30.711
CEA	Wind Onshore B Block 3 2020	1.488	93 541.667	34.246
WAF	Wind Onshore B Block 3 2020	7.676	98 958.333	35.751
EAS	Wind Onshore B Block 3 2020	0.174	85 416.667	30.031
EAE	Wind Onshore B Block 3 2020	0.26	90 833.333	34.85
RUS	Wind Onshore B Block 3 2020	24.426	112 500	39.676
SAF	Wind Onshore B Block 3 2020	7.475	90 833.333	32.441
GLF	Wind Onshore B Block 3 2020	7.385	85 416.667	30.374
CAS	Wind Onshore B Block 3 2020	7.876	98 958.333	32.525
CEE	Wind Onshore B Block 3 2020	0	96 250	0
NOE	Wind Onshore B Block 3 2020	2.704	98 958.333	36.989
BRI	Wind Onshore B Block 3 2020	0.009	96 250	30.906
USA	Wind Onshore B Block 3 2020	2.963	85 416.667	30.966
CAN	Wind Onshore B Block 3 2020	17.095	85 416.667	31.316
ANZ	Wind Onshore B Block 3 2020	9.973	80 000	28.061
PAC	Wind Offshore Block 3 2020	3.342	162 500	80.454
SWA	Wind Offshore Block 3 2020	0.407	143 750	49.701
SEA	Wind Offshore Block 3 2020	2.245	143 750	44.999
SEE	Wind Offshore Block 3 2020	0.121	181 250	47.224
IND	Wind Offshore Block 3 2020	1.807	143 750	50.313

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CHN	Wind Offshore Block 3 2020	13.991	143 750	67.052
LEV	Wind Offshore Block 3 2020	0.013	156 250	43.599
EAF	Wind Offshore Block 3 2020	0.565	187 500	44.722
IRN	Wind Offshore Block 3 2020	0.417	181 250	86.873
SWE	Wind Offshore Block 3 2020	0.827	175 000	46.755
JSK	Wind Offshore Block 3 2020	1.164	193 750	47.111
NAF	Wind Offshore Block 3 2020	1.593	181 250	52.28
CEA	Wind Offshore Block 3 2020	7.968	175 000	83.066
WAF	Wind Offshore Block 3 2020	0.199	187 500	44.345
EAS	Wind Offshore Block 3 2020	2.789	156 250	93.76
EAE	Wind Offshore Block 3 2020	1.564	168 750	48.559
RUS	Wind Offshore Block 3 2020	1.316	218 750	60.231
SAF	Wind Offshore Block 3 2020	0.074	168 750	39.587
GLF	Wind Offshore Block 3 2020	0.783	156 250	43.718
CAS	Wind Offshore Block 3 2020	1.291	187 500	43.884
CEE	Wind Offshore Block 3 2020	0	181 250	0
NOE	Wind Offshore Block 3 2020	0.165	187 500	44.712
BRI	Wind Offshore Block 3 2020	0.172	181 250	44.063
USA	Wind Offshore Block 3 2020	8.14	156 250	68.993
CAN	Wind Offshore Block 3 2020	2.022	156 250	38.712
ANZ	Wind Offshore Block 3 2020	6.033	143 750	39.463
PAC	PV Plant A Block 4 2020	2.682	72 916.667	35.685
SWA	PV Plant A Block 4 2020	26.702	66 666.667	33.041
SEA	PV Plant A Block 4 2020	36.65	66 666.667	33.146
SEE	PV Plant A Block 4 2020	25.701	72 916.667	34.794

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
IND	PV Plant A Block 4 2020	12.805	58 333.333	29.227
CHN	PV Plant A Block 4 2020	65.332	60 416.667	30.425
LEV	PV Plant A Block 4 2020	7.248	58 333.333	27.943
EAF	PV Plant A Block 4 2020	39.086	83 333.333	37.099
IRN	PV Plant A Block 4 2020	32.205	81 250	35.466
SWE	PV Plant A Block 4 2020	10.159	64 583.333	32.602
JSK	PV Plant A Block 4 2020	0	110 416.667	0
NAF	PV Plant A Block 4 2020	20.825	81 250	35.698
CEA	PV Plant A Block 4 2020	20.691	72 916.667	34.076
WAF	PV Plant A Block 4 2020	49.893	83 333.333	37.007
EAS	PV Plant A Block 4 2020	2.232	72 916.667	35.605
EAE	PV Plant A Block 4 2020	0	72 916.667	0
RUS	PV Plant A Block 4 2020	1.226	102 083.333	45.355
SAF	PV Plant A Block 4 2020	1.765	77 083.333	37.052
GLF	PV Plant A Block 4 2020	2.617	58 333.333	27.511
CAS	PV Plant A Block 4 2020	40.181	81 250	37.058
CEE	PV Plant A Block 4 2020	0	72 916.667	0
NOE	PV Plant A Block 4 2020	0	72 916.667	0
BRI	PV Plant A Block 4 2020	0.001	68 750	30.967
USA	PV Plant A Block 4 2020	71.617	77 083.333	35.564
CAN	PV Plant A Block 4 2020	0.38	70 833.333	36.126
ANZ	PV Plant A Block 4 2020	0.476	64 583.333	33.543
PAC	PV Plant B Block 4 2020	0.074	77 083.333	36.281
SWA	PV Plant B Block 4 2020	27.909	70 208.333	33.617
SEA	PV Plant B Block 4 2020	33.18	70 208.333	34.849

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SEE	PV Plant B Block 4 2020	0.023	77 083.333	36.179
IND	PV Plant B Block 4 2020	0.951	61 041.667	28.835
CHN	PV Plant B Block 4 2020	126.525	63 333.333	30.405
LEV	PV Plant B Block 4 2020	0.239	61 041.667	27.902
EAF	PV Plant B Block 4 2020	120.687	88 541.667	38.641
IRN	PV Plant B Block 4 2020	3.569	86 250	35.881
SWE	PV Plant B Block 4 2020	0.002	67 916.667	35.241
JSK	PV Plant B Block 4 2020	0	118 333.333	0
NAF	PV Plant B Block 4 2020	3.956	86 250	35.751
CEA	PV Plant B Block 4 2020	6.807	77 083.333	35.168
WAF	PV Plant B Block 4 2020	57.319	88 541.667	38.797
EAS	PV Plant B Block 4 2020	0.56	77 083.333	34.997
EAE	PV Plant B Block 4 2020	0	77 083.333	0
RUS	PV Plant B Block 4 2020	0.441	109 166.667	47.548
SAF	PV Plant B Block 4 2020	4.656	81 666.667	39.246
GLF	PV Plant B Block 4 2020	0.149	61 041.667	28.277
CAS	PV Plant B Block 4 2020	72.363	86 250	39.662
CEE	PV Plant B Block 4 2020	0	77 083.333	0
NOE	PV Plant B Block 4 2020	0	77 083.333	0
BRI	PV Plant B Block 4 2020	0	72 500	0
USA	PV Plant B Block 4 2020	28.368	81 666.667	37.061
CAN	PV Plant B Block 4 2020	1.579	74 791.667	37.394
ANZ	PV Plant B Block 4 2020	7.143	67 916.667	34.74
PAC	PV Rooftop Block 4 2020	3.922	77 083.333	37.093
SWA	PV Rooftop Block 4 2020	0.968	70 208.333	34.376

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SEA	PV Rooftop Block 4 2020	1.175	70 208.333	34.391
SEE	PV Rooftop Block 4 2020	1.582	77 083.333	36.648
IND	PV Rooftop Block 4 2020	94.31	61 041.667	30.668
CHN	PV Rooftop Block 4 2020	3.445	63 333.333	32.412
LEV	PV Rooftop Block 4 2020	4.431	61 041.667	29.517
EAF	PV Rooftop Block 4 2020	13.67	88 541.667	39.417
IRN	PV Rooftop Block 4 2020	9.663	86 250	36.763
SWE	PV Rooftop Block 4 2020	1.257	67 916.667	33.57
JSK	PV Rooftop Block 4 2020	0	118 333.333	0
NAF	PV Rooftop Block 4 2020	4.016	86 250	39.004
CEA	PV Rooftop Block 4 2020	6.469	77 083.333	34.98
WAF	PV Rooftop Block 4 2020	3.739	88 541.667	38.647
EAS	PV Rooftop Block 4 2020	3.15	77 083.333	37.702
EAE	PV Rooftop Block 4 2020	0	77 083.333	0
RUS	PV Rooftop Block 4 2020	0.061	109 166.667	47.063
SAF	PV Rooftop Block 4 2020	0.015	81 666.667	37.662
GLF	PV Rooftop Block 4 2020	1.587	61 041.667	28.892
CAS	PV Rooftop Block 4 2020	2.94	86 250	38.768
CEE	PV Rooftop Block 4 2020	0	77 083.333	0
NOE	PV Rooftop Block 4 2020	0	77 083.333	0
BRI	PV Rooftop Block 4 2020	0	72 500	33.525
USA	PV Rooftop Block 4 2020	1.547	81 666.667	36.342
CAN	PV Rooftop Block 4 2020	0	74 791.667	37.596
ANZ	PV Rooftop Block 4 2020	0.005	67 916.667	34.81
PAC	Wind Onshore A Block 4 2020	0.055	85 937.5	23.989

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SWA	Wind Onshore A Block 4 2020	0.525	78 125	23.457
SEA	Wind Onshore A Block 4 2020	5.453	78 125	23.128
SEE	Wind Onshore A Block 4 2020	0.44	93 750	27.002
IND	Wind Onshore A Block 4 2020	0.102	78 125	24.178
CHN	Wind Onshore A Block 4 2020	3.887	78 125	22.322
LEV	Wind Onshore A Block 4 2020	0.743	83 333.333	24.148
EAF	Wind Onshore A Block 4 2020	1.243	96 354.167	25.469
IRN	Wind Onshore A Block 4 2020	2.499	93 750	26.393
SWE	Wind Onshore A Block 4 2020	1.593	91 145.833	27.04
JSK	Wind Onshore A Block 4 2020	0.161	98 958.333	27.515
NAF	Wind Onshore A Block 4 2020	2.43	93 750	24.731
CEA	Wind Onshore A Block 4 2020	0.548	91 145.833	24.722
WAF	Wind Onshore A Block 4 2020	0.79	96 354.167	26.576
EAS	Wind Onshore A Block 4 2020	0.13	83 333.333	22.186
EAE	Wind Onshore A Block 4 2020	4.582	88 541.667	28.083
RUS	Wind Onshore A Block 4 2020	9.226	109 375	30.037
SAF	Wind Onshore A Block 4 2020	0.616	88 541.667	24.968
GLF	Wind Onshore A Block 4 2020	4.321	83 333.333	23.899
CAS	Wind Onshore A Block 4 2020	2.568	96 354.167	25.562
CEE	Wind Onshore A Block 4 2020	0.909	93 750	27.681
NOE	Wind Onshore A Block 4 2020	0.89	96 354.167	28.414
BRI	Wind Onshore A Block 4 2020	0.391	93 750	25.664
USA	Wind Onshore A Block 4 2020	15.397	83 333.333	23.821
CAN	Wind Onshore A Block 4 2020	4.671	83 333.333	23.802
ANZ	Wind Onshore A Block 4 2020	1.438	78 125	22.94

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
PAC	Wind Onshore B Block 4 2020	0.044	88 125	25.736
SWA	Wind Onshore B Block 4 2020	0.969	80 000	24.46
SEA	Wind Onshore B Block 4 2020	6.047	80 000	23.112
SEE	Wind Onshore B Block 4 2020	0	96 250	25.481
IND	Wind Onshore B Block 4 2020	0.184	80 000	23.742
CHN	Wind Onshore B Block 4 2020	8.248	80 000	22.302
LEV	Wind Onshore B Block 4 2020	2.275	85 416.667	24.57
EAF	Wind Onshore B Block 4 2020	5.69	98 958.333	25.784
IRN	Wind Onshore B Block 4 2020	3.525	96 250	26.472
SWE	Wind Onshore B Block 4 2020	0.003	93 541.667	26.818
JSK	Wind Onshore B Block 4 2020	0	101 666.667	0
NAF	Wind Onshore B Block 4 2020	9.975	96 250	24.632
CEA	Wind Onshore B Block 4 2020	0.398	93 541.667	26.177
WAF	Wind Onshore B Block 4 2020	6.236	98 958.333	27.438
EAS	Wind Onshore B Block 4 2020	0.078	85 416.667	23.562
EAE	Wind Onshore B Block 4 2020	0.187	90 833.333	27.933
RUS	Wind Onshore B Block 4 2020	13.185	112 500	29.443
SAF	Wind Onshore B Block 4 2020	1.378	90 833.333	25.667
GLF	Wind Onshore B Block 4 2020	2.841	85 416.667	24.119
CAS	Wind Onshore B Block 4 2020	17.123	98 958.333	26.318
CEE	Wind Onshore B Block 4 2020	0	96 250	0
NOE	Wind Onshore B Block 4 2020	0.967	98 958.333	27.62
BRI	Wind Onshore B Block 4 2020	0.048	96 250	25.455
USA	Wind Onshore B Block 4 2020	2.922	85 416.667	24.282
CAN	Wind Onshore B Block 4 2020	7.349	85 416.667	24.065

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
ANZ	Wind Onshore B Block 4 2020	7.919	80 000	22.972
PAC	Wind Offshore Block 4 2020	0.592	162 500	36.536
SWA	Wind Offshore Block 4 2020	0.367	143 750	31.853
SEA	Wind Offshore Block 4 2020	8.12	143 750	57.485
SEE	Wind Offshore Block 4 2020	0.047	181 250	36.862
IND	Wind Offshore Block 4 2020	0.224	143 750	31.174
CHN	Wind Offshore Block 4 2020	3.74	143 750	49.39
LEV	Wind Offshore Block 4 2020	0.008	156 250	33.047
EAF	Wind Offshore Block 4 2020	0.216	187 500	36.828
IRN	Wind Offshore Block 4 2020	0	181 250	0
SWE	Wind Offshore Block 4 2020	0.904	175 000	45.878
JSK	Wind Offshore Block 4 2020	0.349	193 750	40.575
NAF	Wind Offshore Block 4 2020	0.126	181 250	39.912
CEA	Wind Offshore Block 4 2020	1.25	175 000	65.916
WAF	Wind Offshore Block 4 2020	0.066	187 500	33.144
EAS	Wind Offshore Block 4 2020	0.492	156 250	125.166
EAE	Wind Offshore Block 4 2020	1.376	168 750	45.632
RUS	Wind Offshore Block 4 2020	6.082	218 750	44.003
SAF	Wind Offshore Block 4 2020	0.05	168 750	38.246
GLF	Wind Offshore Block 4 2020	0.316	156 250	47.137
CAS	Wind Offshore Block 4 2020	0.563	187 500	36.75
CEE	Wind Offshore Block 4 2020	0.002	181 250	35.583
NOE	Wind Offshore Block 4 2020	2.015	187 500	39.524
BRI	Wind Offshore Block 4 2020	0.125	181 250	35.647
USA	Wind Offshore Block 4 2020	8.019	156 250	37.808

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CAN	Wind Offshore Block 4 2020	6.141	156 250	32.364
ANZ	Wind Offshore Block 4 2020	5.931	143 750	35.613
PAC	PV Plant A Block 5 2020	0	72 916.667	0
SWA	PV Plant A Block 5 2020	0.302	66 666.667	28.876
SEA	PV Plant A Block 5 2020	0.1	66 666.667	28.888
SEE	PV Plant A Block 5 2020	0	72 916.667	0
IND	PV Plant A Block 5 2020	6.456	58 333.333	26.106
CHN	PV Plant A Block 5 2020	9.489	60 416.667	26.404
LEV	PV Plant A Block 5 2020	8.061	58 333.333	25.502
EAF	PV Plant A Block 5 2020	22.177	83 333.333	32.692
IRN	PV Plant A Block 5 2020	52.349	81 250	31.968
SWE	PV Plant A Block 5 2020	0.019	64 583.333	28.591
JSK	PV Plant A Block 5 2020	0	110 416.667	0
NAF	PV Plant A Block 5 2020	21.296	81 250	32.426
CEA	PV Plant A Block 5 2020	18.44	72 916.667	29.904
WAF	PV Plant A Block 5 2020	29.84	83 333.333	33.041
EAS	PV Plant A Block 5 2020	0.13	72 916.667	30.36
EAE	PV Plant A Block 5 2020	0	72 916.667	0
RUS	PV Plant A Block 5 2020	0	102 083.333	0
SAF	PV Plant A Block 5 2020	0	77 083.333	0
GLF	PV Plant A Block 5 2020	94.135	58 333.333	25.203
CAS	PV Plant A Block 5 2020	7.542	81 250	31.301
CEE	PV Plant A Block 5 2020	0	72 916.667	0
NOE	PV Plant A Block 5 2020	0	72 916.667	0
BRI	PV Plant A Block 5 2020	0	68 750	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
USA	PV Plant A Block 5 2020	58.761	77 083.333	31.074
CAN	PV Plant A Block 5 2020	0	70 833.333	0
ANZ	PV Plant A Block 5 2020	0	64 583.333	0
PAC	PV Plant B Block 5 2020	0	77 083.333	0
SWA	PV Plant B Block 5 2020	0.057	70 208.333	29.778
SEA	PV Plant B Block 5 2020	0	70 208.333	0
SEE	PV Plant B Block 5 2020	0	77 083.333	0
IND	PV Plant B Block 5 2020	8.759	61 041.667	25.298
CHN	PV Plant B Block 5 2020	54.686	63 333.333	26.596
LEV	PV Plant B Block 5 2020	32.317	61 041.667	25.494
EAF	PV Plant B Block 5 2020	81.704	88 541.667	34.057
IRN	PV Plant B Block 5 2020	67.98	86 250	33.083
SWE	PV Plant B Block 5 2020	0	67 916.667	0
JSK	PV Plant B Block 5 2020	0	118 333.333	0
NAF	PV Plant B Block 5 2020	92.371	86 250	33.46
CEA	PV Plant B Block 5 2020	36.076	77 083.333	31.025
WAF	PV Plant B Block 5 2020	105.68	88 541.667	33.778
EAS	PV Plant B Block 5 2020	1.4	77 083.333	30.462
EAE	PV Plant B Block 5 2020	0	77 083.333	0
RUS	PV Plant B Block 5 2020	0	109 166.667	0
SAF	PV Plant B Block 5 2020	0	81 666.667	0
GLF	PV Plant B Block 5 2020	74.194	61 041.667	25.751
CAS	PV Plant B Block 5 2020	41.471	86 250	32.509
CEE	PV Plant B Block 5 2020	0	77 083.333	0
NOE	PV Plant B Block 5 2020	0	77 083.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
BRI	PV Plant B Block 5 2020	0	72 500	0
USA	PV Plant B Block 5 2020	27.455	81 666.667	32.455
CAN	PV Plant B Block 5 2020	0	74 791.667	0
ANZ	PV Plant B Block 5 2020	0	67 916.667	0
PAC	PV Rooftop Block 5 2020	0	77 083.333	0
SWA	PV Rooftop Block 5 2020	0	70 208.333	0
SEA	PV Rooftop Block 5 2020	0.039	70 208.333	30.038
SEE	PV Rooftop Block 5 2020	0	77 083.333	0
IND	PV Rooftop Block 5 2020	0.467	61 041.667	27.448
CHN	PV Rooftop Block 5 2020	0.101	63 333.333	28.106
LEV	PV Rooftop Block 5 2020	1.402	61 041.667	26.18
EAF	PV Rooftop Block 5 2020	1.471	88 541.667	34.007
IRN	PV Rooftop Block 5 2020	7.422	86 250	34.316
SWE	PV Rooftop Block 5 2020	0.033	67 916.667	29.627
JSK	PV Rooftop Block 5 2020	0	118 333.333	0
NAF	PV Rooftop Block 5 2020	0.115	86 250	34.88
CEA	PV Rooftop Block 5 2020	1.053	77 083.333	31.631
WAF	PV Rooftop Block 5 2020	6.838	88 541.667	34.77
EAS	PV Rooftop Block 5 2020	0	77 083.333	0
EAE	PV Rooftop Block 5 2020	0	77 083.333	0
RUS	PV Rooftop Block 5 2020	0	109 166.667	0
SAF	PV Rooftop Block 5 2020	0	81 666.667	0
GLF	PV Rooftop Block 5 2020	1.478	61 041.667	26.727
CAS	PV Rooftop Block 5 2020	0.71	86 250	33.158
CEE	PV Rooftop Block 5 2020	0	77 083.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
NOE	PV Rooftop Block 5 2020	0	77 083.333	0
BRI	PV Rooftop Block 5 2020	0	72 500	0
USA	PV Rooftop Block 5 2020	1.293	81 666.667	32.638
CAN	PV Rooftop Block 5 2020	0	74 791.667	0
ANZ	PV Rooftop Block 5 2020	0	67 916.667	0
PAC	Wind Onshore A Block 5 2020	0.031	85 937.5	18.687
SWA	Wind Onshore A Block 5 2020	0.389	78 125	16.661
SEA	Wind Onshore A Block 5 2020	1.886	78 125	17.438
SEE	Wind Onshore A Block 5 2020	0.142	93 750	22.07
IND	Wind Onshore A Block 5 2020	0.037	78 125	18.399
CHN	Wind Onshore A Block 5 2020	1.925	78 125	17.838
LEV	Wind Onshore A Block 5 2020	0.328	83 333.333	19.02
EAF	Wind Onshore A Block 5 2020	0.661	96 354.167	19.413
IRN	Wind Onshore A Block 5 2020	0.636	93 750	21.28
SWE	Wind Onshore A Block 5 2020	0.285	91 145.833	22.073
JSK	Wind Onshore A Block 5 2020	0.048	98 958.333	22.562
NAF	Wind Onshore A Block 5 2020	0.576	93 750	21.118
CEA	Wind Onshore A Block 5 2020	0.195	91 145.833	18.654
WAF	Wind Onshore A Block 5 2020	0.168	96 354.167	19.851
EAS	Wind Onshore A Block 5 2020	0.047	83 333.333	17.804
EAE	Wind Onshore A Block 5 2020	0.026	88 541.667	23.852
RUS	Wind Onshore A Block 5 2020	0.195	109 375	24.629
SAF	Wind Onshore A Block 5 2020	0.175	88 541.667	20.164
GLF	Wind Onshore A Block 5 2020	0.689	83 333.333	19.394
CAS	Wind Onshore A Block 5 2020	0.788	96 354.167	21.214

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CEE	Wind Onshore A Block 5 2020	0.381	93 750	22.572
NOE	Wind Onshore A Block 5 2020	0.693	96 354.167	21.827
BRI	Wind Onshore A Block 5 2020	1.553	93 750	20.844
USA	Wind Onshore A Block 5 2020	9.097	83 333.333	19.964
CAN	Wind Onshore A Block 5 2020	0.772	83 333.333	19.225
ANZ	Wind Onshore A Block 5 2020	0.462	78 125	19.058
PAC	Wind Onshore B Block 5 2020	0.01	88 125	20.208
SWA	Wind Onshore B Block 5 2020	1.281	80 000	16.79
SEA	Wind Onshore B Block 5 2020	7.183	80 000	17.275
SEE	Wind Onshore B Block 5 2020	0	96 250	21.947
IND	Wind Onshore B Block 5 2020	0.191	80 000	17.9
CHN	Wind Onshore B Block 5 2020	6.568	80 000	18.224
LEV	Wind Onshore B Block 5 2020	1.436	85 416.667	19.308
EAF	Wind Onshore B Block 5 2020	4.093	98 958.333	19.361
IRN	Wind Onshore B Block 5 2020	0.995	96 250	21.483
SWE	Wind Onshore B Block 5 2020	0.001	93 541.667	19.796
JSK	Wind Onshore B Block 5 2020	0.001	101 666.667	20.393
NAF	Wind Onshore B Block 5 2020	3.857	96 250	21.246
CEA	Wind Onshore B Block 5 2020	0.079	93 541.667	20.956
WAF	Wind Onshore B Block 5 2020	3.126	98 958.333	20.213
EAS	Wind Onshore B Block 5 2020	0.051	85 416.667	17.701
EAE	Wind Onshore B Block 5 2020	0.005	90 833.333	23.229
RUS	Wind Onshore B Block 5 2020	1.489	112 500	24.807
SAF	Wind Onshore B Block 5 2020	0.141	90 833.333	21.028
GLF	Wind Onshore B Block 5 2020	0.259	85 416.667	19.147

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CAS	Wind Onshore B Block 5 2020	5.053	98 958.333	21.433
CEE	Wind Onshore B Block 5 2020	0	96 250	0
NOE	Wind Onshore B Block 5 2020	1.509	98 958.333	21.59
BRI	Wind Onshore B Block 5 2020	0.259	96 250	19.494
USA	Wind Onshore B Block 5 2020	2.754	85 416.667	19.821
CAN	Wind Onshore B Block 5 2020	3.609	85 416.667	19.274
ANZ	Wind Onshore B Block 5 2020	1.515	80 000	18.466
PAC	Wind Offshore Block 5 2020	0.011	162 500	25.32
SWA	Wind Offshore Block 5 2020	0.704	143 750	22.477
SEA	Wind Offshore Block 5 2020	5.392	143 750	33.942
SEE	Wind Offshore Block 5 2020	0.005	181 250	32.181
IND	Wind Offshore Block 5 2020	0.151	143 750	39.072
CHN	Wind Offshore Block 5 2020	1.423	143 750	57.174
LEV	Wind Offshore Block 5 2020	0.077	156 250	25.773
EAF	Wind Offshore Block 5 2020	0.379	187 500	38.546
IRN	Wind Offshore Block 5 2020	0	181 250	0
SWE	Wind Offshore Block 5 2020	0.472	175 000	55.295
JSK	Wind Offshore Block 5 2020	0.002	193 750	34.016
NAF	Wind Offshore Block 5 2020	0.023	181 250	31.634
CEA	Wind Offshore Block 5 2020	0.11	175 000	30.357
WAF	Wind Offshore Block 5 2020	0.311	187 500	28.899
EAS	Wind Offshore Block 5 2020	0.44	156 250	43.798
EAE	Wind Offshore Block 5 2020	1.239	168 750	39.051
RUS	Wind Offshore Block 5 2020	0.798	218 750	57.433
SAF	Wind Offshore Block 5 2020	0.039	168 750	30.307

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
GLF	Wind Offshore Block 5 2020	0.113	156 250	25.107
CAS	Wind Offshore Block 5 2020	0.007	187 500	38.343
CEE	Wind Offshore Block 5 2020	3.081	181 250	78.727
NOE	Wind Offshore Block 5 2020	4.474	187 500	44.809
BRI	Wind Offshore Block 5 2020	4.155	181 250	47.346
USA	Wind Offshore Block 5 2020	5.056	156 250	36.638
CAN	Wind Offshore Block 5 2020	4.487	156 250	29.351
ANZ	Wind Offshore Block 5 2020	2.54	143 750	28.989
PAC	PV Plant A Block 1 2030	0	41 666.667	0
SWA	PV Plant A Block 1 2030	1.72	38 541.667	37.294
SEA	PV Plant A Block 1 2030	24.907	38 541.667	35.682
SEE	PV Plant A Block 1 2030	0	41 666.667	0
IND	PV Plant A Block 1 2030	0	36 458.333	0
CHN	PV Plant A Block 1 2030	0.305	36 458.333	33.132
LEV	PV Plant A Block 1 2030	0	37 500	0
EAF	PV Plant A Block 1 2030	0	46 875	0
IRN	PV Plant A Block 1 2030	0	45 833.333	0
SWE	PV Plant A Block 1 2030	0	37 500	0
JSK	PV Plant A Block 1 2030	0	52 083.333	0
NAF	PV Plant A Block 1 2030	0	45 833.333	0
CEA	PV Plant A Block 1 2030	0	41 666.667	0
WAF	PV Plant A Block 1 2030	0	46 875	0
EAS	PV Plant A Block 1 2030	0	41 666.667	0
EAE	PV Plant A Block 1 2030	0.004	41 666.667	35.11
RUS	PV Plant A Block 1 2030	2.295	47 916.667	41.391

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SAF	PV Plant A Block 1 2030	2.133	39 583.333	34.694
GLF	PV Plant A Block 1 2030	0	36 458.333	0
CAS	PV Plant A Block 1 2030	0	45 833.333	0
CEE	PV Plant A Block 1 2030	0	41 666.667	0
NOE	PV Plant A Block 1 2030	3.229	41 666.667	40.426
BRI	PV Plant A Block 1 2030	5.143	39 583.333	35.929
USA	PV Plant A Block 1 2030	0.538	43 750	39.464
CAN	PV Plant A Block 1 2030	0.253	40 625	36.273
ANZ	PV Plant A Block 1 2030	10.222	37 500	38.01
PAC	PV Plant B Block 1 2030	0.005	43 750	36.6
SWA	PV Plant B Block 1 2030	1.772	40 312.5	46.042
SEA	PV Plant B Block 1 2030	53.497	40 312.5	39.352
SEE	PV Plant B Block 1 2030	0	43 750	0
IND	PV Plant B Block 1 2030	0	38 020.833	0
CHN	PV Plant B Block 1 2030	0	38 020.833	0
LEV	PV Plant B Block 1 2030	0	39 166.667	0
EAF	PV Plant B Block 1 2030	0	49 479.167	0
IRN	PV Plant B Block 1 2030	0	48 333.333	0
SWE	PV Plant B Block 1 2030	0	39 166.667	0
JSK	PV Plant B Block 1 2030	0	55 208.333	0
NAF	PV Plant B Block 1 2030	0	48 333.333	0
CEA	PV Plant B Block 1 2030	0	43 750	0
WAF	PV Plant B Block 1 2030	0	49 479.167	0
EAS	PV Plant B Block 1 2030	0	43 750	0
EAE	PV Plant B Block 1 2030	0	43 750	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
RUS	PV Plant B Block 1 2030	39.762	50 625	44.089
SAF	PV Plant B Block 1 2030	0.175	41 458.333	35.078
GLF	PV Plant B Block 1 2030	0	38 020.833	0
CAS	PV Plant B Block 1 2030	0	48 333.333	0
CEE	PV Plant B Block 1 2030	0	43 750	0
NOE	PV Plant B Block 1 2030	13.632	43 750	44.749
BRI	PV Plant B Block 1 2030	0.975	41 458.333	39.341
USA	PV Plant B Block 1 2030	3.648	46 041.667	44.389
CAN	PV Plant B Block 1 2030	7.569	42 604.167	37.679
ANZ	PV Plant B Block 1 2030	17.453	39 166.667	40.538
PAC	PV Rooftop Block 1 2030	0	43 750	0
SWA	PV Rooftop Block 1 2030	0.186	40 312.5	37.782
SEA	PV Rooftop Block 1 2030	0.774	40 312.5	35.682
SEE	PV Rooftop Block 1 2030	0	43 750	0
IND	PV Rooftop Block 1 2030	0	38 020.833	0
CHN	PV Rooftop Block 1 2030	3.126	38 020.833	34.04
LEV	PV Rooftop Block 1 2030	0	39 166.667	0
EAF	PV Rooftop Block 1 2030	0	49 479.167	0
IRN	PV Rooftop Block 1 2030	0	48 333.333	0
SWE	PV Rooftop Block 1 2030	0	39 166.667	0
JSK	PV Rooftop Block 1 2030	0	55 208.333	0
NAF	PV Rooftop Block 1 2030	0	48 333.333	0
CEA	PV Rooftop Block 1 2030	0	43 750	0
WAF	PV Rooftop Block 1 2030	0	49 479.167	0
EAS	PV Rooftop Block 1 2030	0	43 750	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAE	PV Rooftop Block 1 2030	0.003	43 750	36.347
RUS	PV Rooftop Block 1 2030	0.306	50 625	42.409
SAF	PV Rooftop Block 1 2030	0.472	41 458.333	35.936
GLF	PV Rooftop Block 1 2030	0	38 020.833	0
CAS	PV Rooftop Block 1 2030	0	48 333.333	0
CEE	PV Rooftop Block 1 2030	0	43 750	0
NOE	PV Rooftop Block 1 2030	0.18	43 750	38.545
BRI	PV Rooftop Block 1 2030	0.81	41 458.333	36.207
USA	PV Rooftop Block 1 2030	0.013	46 041.667	38.174
CAN	PV Rooftop Block 1 2030	0	42 604.167	0
ANZ	PV Rooftop Block 1 2030	0.689	39 166.667	39.003
PAC	Wind Onshore A Block 1 2030	11.937	66 770.833	119.527
SWA	Wind Onshore A Block 1 2030	10.358	60 208.333	85.322
SEA	Wind Onshore A Block 1 2030	17.851	60 208.333	71.356
SEE	Wind Onshore A Block 1 2030	5.184	73 333.333	70.288
IND	Wind Onshore A Block 1 2030	4.232	60 208.333	67.869
CHN	Wind Onshore A Block 1 2030	13.325	60 208.333	60.114
LEV	Wind Onshore A Block 1 2030	0.198	60 208.333	46.164
EAF	Wind Onshore A Block 1 2030	9.571	75 520.833	78.568
IRN	Wind Onshore A Block 1 2030	5.138	73 333.333	63.874
SWE	Wind Onshore A Block 1 2030	2.149	71 145.833	59.858
JSK	Wind Onshore A Block 1 2030	0	77 708.333	57.258
NAF	Wind Onshore A Block 1 2030	1.186	73 333.333	51.932
CEA	Wind Onshore A Block 1 2030	9.186	71 145.833	79.936
WAF	Wind Onshore A Block 1 2030	19.395	75 520.833	88.915

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAS	Wind Onshore A Block 1 2030	7.885	64 583.333	78.156
EAE	Wind Onshore A Block 1 2030	0.846	68 958.333	62.995
RUS	Wind Onshore A Block 1 2030	2.008	75 520.833	72.285
SAF	Wind Onshore A Block 1 2030	2	60 208.333	48.312
GLF	Wind Onshore A Block 1 2030	1.561	60 208.333	49.119
CAS	Wind Onshore A Block 1 2030	3.256	75 520.833	72.76
CEE	Wind Onshore A Block 1 2030	0.427	73 333.333	72.303
NOE	Wind Onshore A Block 1 2030	0.238	75 520.833	59.72
BRI	Wind Onshore A Block 1 2030	0	73 333.333	46.44
USA	Wind Onshore A Block 1 2030	8.528	64 583.333	52.095
CAN	Wind Onshore A Block 1 2030	0.858	64 583.333	60.256
ANZ	Wind Onshore A Block 1 2030	0.883	55 833.333	45.545
PAC	Wind Onshore B Block 1 2030	10.442	68 958.333	130.866
SWA	Wind Onshore B Block 1 2030	16.778	62 083.333	86.591
SEA	Wind Onshore B Block 1 2030	38.849	62 083.333	87.361
SEE	Wind Onshore B Block 1 2030	0.005	75 833.333	96.07
IND	Wind Onshore B Block 1 2030	0.963	62 083.333	90.464
CHN	Wind Onshore B Block 1 2030	6.887	62 083.333	51.526
LEV	Wind Onshore B Block 1 2030	0.042	62 083.333	43.448
EAF	Wind Onshore B Block 1 2030	26.897	78 125	71.31
IRN	Wind Onshore B Block 1 2030	1.943	75 833.333	56.417
SWE	Wind Onshore B Block 1 2030	0	73 541.667	39.142
JSK	Wind Onshore B Block 1 2030	0	80 416.667	0
NAF	Wind Onshore B Block 1 2030	0.029	75 833.333	41.409
CEA	Wind Onshore B Block 1 2030	6.297	73 541.667	70.094

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
WAF	Wind Onshore B Block 1 2030	43.15	78 125	111.518
EAS	Wind Onshore B Block 1 2030	3.844	66 666.667	118.143
EAE	Wind Onshore B Block 1 2030	0	71 250	0
RUS	Wind Onshore B Block 1 2030	10.264	78 125	60.874
SAF	Wind Onshore B Block 1 2030	1.042	62 083.333	43.234
GLF	Wind Onshore B Block 1 2030	0.637	62 083.333	48.575
CAS	Wind Onshore B Block 1 2030	4.329	78 125	67.634
CEE	Wind Onshore B Block 1 2030	0	75 833.333	0
NOE	Wind Onshore B Block 1 2030	0.29	78 125	58.664
BRI	Wind Onshore B Block 1 2030	0	75 833.333	0
USA	Wind Onshore B Block 1 2030	2.376	66 666.667	50.286
CAN	Wind Onshore B Block 1 2030	5.777	66 666.667	55.771
ANZ	Wind Onshore B Block 1 2030	2.174	57 500	44.788
PAC	Wind Offshore Block 1 2030	50.877	108 333.333	115.66
SWA	Wind Offshore Block 1 2030	1.161	95 833.333	65.561
SEA	Wind Offshore Block 1 2030	5.856	95 833.333	78.902
SEE	Wind Offshore Block 1 2030	0.412	120 833.333	65.58
IND	Wind Offshore Block 1 2030	4.246	95 833.333	71.073
CHN	Wind Offshore Block 1 2030	0.321	95 833.333	47.079
LEV	Wind Offshore Block 1 2030	0.443	95 833.333	50.321
EAF	Wind Offshore Block 1 2030	9.012	125 000	76.13
IRN	Wind Offshore Block 1 2030	1.493	120 833.333	61.202
SWE	Wind Offshore Block 1 2030	0.793	116 666.667	56.821
JSK	Wind Offshore Block 1 2030	0	129 166.667	60.394
NAF	Wind Offshore Block 1 2030	0.058	120 833.333	53.53

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CEA	Wind Offshore Block 1 2030	2.919	116 666.667	65.966
WAF	Wind Offshore Block 1 2030	8.36	125 000	137.853
EAS	Wind Offshore Block 1 2030	17.706	104 166.667	99.911
EAE	Wind Offshore Block 1 2030	0	112 500	41.78
RUS	Wind Offshore Block 1 2030	0.619	125 000	51.235
SAF	Wind Offshore Block 1 2030	0.054	95 833.333	44.505
GLF	Wind Offshore Block 1 2030	5.887	95 833.333	62.401
CAS	Wind Offshore Block 1 2030	0.595	125 000	60.459
CEE	Wind Offshore Block 1 2030	0.002	120 833.333	78.17
NOE	Wind Offshore Block 1 2030	0.005	125 000	52.846
BRI	Wind Offshore Block 1 2030	0	120 833.333	0
USA	Wind Offshore Block 1 2030	1.079	104 166.667	100.468
CAN	Wind Offshore Block 1 2030	0.008	104 166.667	47.874
ANZ	Wind Offshore Block 1 2030	2.207	87 500	48.07
PAC	PV Plant A Block 2 2030	0.603	41 666.667	29.226
SWA	PV Plant A Block 2 2030	7.127	38 541.667	28.29
SEA	PV Plant A Block 2 2030	82.902	38 541.667	29.497
SEE	PV Plant A Block 2 2030	1.359	41 666.667	27.888
IND	PV Plant A Block 2 2030	0.071	36 458.333	26.295
CHN	PV Plant A Block 2 2030	6.06	36 458.333	26.953
LEV	PV Plant A Block 2 2030	0	37 500	0
EAF	PV Plant A Block 2 2030	2.998	46 875	31.305
IRN	PV Plant A Block 2 2030	0	45 833.333	0
SWE	PV Plant A Block 2 2030	10.344	37 500	26.369
JSK	PV Plant A Block 2 2030	0	52 083.333	32.582

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
NAF	PV Plant A Block 2 2030	0	45 833.333	0
CEA	PV Plant A Block 2 2030	0.676	41 666.667	27.726
WAF	PV Plant A Block 2 2030	1.139	46 875	30.758
EAS	PV Plant A Block 2 2030	0.801	41 666.667	29.686
EAE	PV Plant A Block 2 2030	43.836	41 666.667	29.469
RUS	PV Plant A Block 2 2030	65.835	47 916.667	32.981
SAF	PV Plant A Block 2 2030	21.267	39 583.333	28.849
GLF	PV Plant A Block 2 2030	0	36 458.333	0
CAS	PV Plant A Block 2 2030	4.027	45 833.333	31.276
CEE	PV Plant A Block 2 2030	0	41 666.667	29.245
NOE	PV Plant A Block 2 2030	3.737	41 666.667	32.018
BRI	PV Plant A Block 2 2030	2.248	39 583.333	31.57
USA	PV Plant A Block 2 2030	6.933	43 750	29.815
CAN	PV Plant A Block 2 2030	6.747	40 625	28.385
ANZ	PV Plant A Block 2 2030	8.204	37 500	30.115
PAC	PV Plant B Block 2 2030	1.809	43 750	30.083
SWA	PV Plant B Block 2 2030	4.991	40 312.5	27.664
SEA	PV Plant B Block 2 2030	54.482	40 312.5	30.456
SEE	PV Plant B Block 2 2030	0	43 750	0
IND	PV Plant B Block 2 2030	0.241	38 020.833	26.896
CHN	PV Plant B Block 2 2030	0.041	38 020.833	26.253
LEV	PV Plant B Block 2 2030	0	39 166.667	0
EAF	PV Plant B Block 2 2030	6.924	49 479.167	31.764
IRN	PV Plant B Block 2 2030	0	48 333.333	0
SWE	PV Plant B Block 2 2030	0	39 166.667	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
JSK	PV Plant B Block 2 2030	0	55 208.333	0
NAF	PV Plant B Block 2 2030	0	48 333.333	0
CEA	PV Plant B Block 2 2030	0.171	43 750	28.643
WAF	PV Plant B Block 2 2030	1.232	49 479.167	31.886
EAS	PV Plant B Block 2 2030	0.039	43 750	30.154
EAE	PV Plant B Block 2 2030	1.234	43 750	30.372
RUS	PV Plant B Block 2 2030	73.581	50 625	34.828
SAF	PV Plant B Block 2 2030	20.209	41 458.333	28.976
GLF	PV Plant B Block 2 2030	0	38 020.833	0
CAS	PV Plant B Block 2 2030	31.25	48 333.333	32.206
CEE	PV Plant B Block 2 2030	0	43 750	0
NOE	PV Plant B Block 2 2030	3.142	43 750	34.165
BRI	PV Plant B Block 2 2030	0.07	41 458.333	34.452
USA	PV Plant B Block 2 2030	4.912	46 041.667	35.18
CAN	PV Plant B Block 2 2030	53.147	42 604.167	30.982
ANZ	PV Plant B Block 2 2030	62.835	39 166.667	29.541
PAC	PV Rooftop Block 2 2030	0.085	43 750	28.69
SWA	PV Rooftop Block 2 2030	0.943	40 312.5	29.39
SEA	PV Rooftop Block 2 2030	4.04	40 312.5	29.898
SEE	PV Rooftop Block 2 2030	0.203	43 750	29.138
IND	PV Rooftop Block 2 2030	0.279	38 020.833	26.637
CHN	PV Rooftop Block 2 2030	33.435	38 020.833	28.28
LEV	PV Rooftop Block 2 2030	0	39 166.667	0
EAF	PV Rooftop Block 2 2030	0.5	49 479.167	32.853
IRN	PV Rooftop Block 2 2030	0	48 333.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SWE	PV Rooftop Block 2 2030	1.43	39 166.667	27.317
JSK	PV Rooftop Block 2 2030	0	55 208.333	34.062
NAF	PV Rooftop Block 2 2030	0	48 333.333	0
CEA	PV Rooftop Block 2 2030	0.001	43 750	28.266
WAF	PV Rooftop Block 2 2030	1.715	49 479.167	31.419
EAS	PV Rooftop Block 2 2030	2.127	43 750	31.789
EAE	PV Rooftop Block 2 2030	3.821	43 750	30.254
RUS	PV Rooftop Block 2 2030	2.813	50 625	35.135
SAF	PV Rooftop Block 2 2030	1.148	41 458.333	30.391
GLF	PV Rooftop Block 2 2030	0	38 020.833	0
CAS	PV Rooftop Block 2 2030	0.105	48 333.333	32.129
CEE	PV Rooftop Block 2 2030	2.551	43 750	30.074
NOE	PV Rooftop Block 2 2030	0.753	43 750	32.614
BRI	PV Rooftop Block 2 2030	1.888	41 458.333	32.324
USA	PV Rooftop Block 2 2030	1.469	46 041.667	30.08
CAN	PV Rooftop Block 2 2030	0.637	42 604.167	28.518
ANZ	PV Rooftop Block 2 2030	0.244	39 166.667	30.236
PAC	Wind Onshore A Block 2 2030	0.457	66 770.833	32.196
SWA	Wind Onshore A Block 2 2030	1.861	60 208.333	30.149
SEA	Wind Onshore A Block 2 2030	10.89	60 208.333	33.747
SEE	Wind Onshore A Block 2 2030	2.752	73 333.333	35.658
IND	Wind Onshore A Block 2 2030	1.562	60 208.333	33.283
CHN	Wind Onshore A Block 2 2030	7.366	60 208.333	29.603
LEV	Wind Onshore A Block 2 2030	0.514	60 208.333	29.168
EAF	Wind Onshore A Block 2 2030	4.484	75 520.833	36.071

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
IRN	Wind Onshore A Block 2 2030	3.512	73 333.333	33.439
SWE	Wind Onshore A Block 2 2030	2.757	71 145.833	33.146
JSK	Wind Onshore A Block 2 2030	0	77 708.333	35.662
NAF	Wind Onshore A Block 2 2030	1.443	73 333.333	31.044
CEA	Wind Onshore A Block 2 2030	3.024	71 145.833	35.116
WAF	Wind Onshore A Block 2 2030	5.155	75 520.833	38.609
EAS	Wind Onshore A Block 2 2030	1.592	64 583.333	32.735
EAE	Wind Onshore A Block 2 2030	1.489	68 958.333	34.661
RUS	Wind Onshore A Block 2 2030	2.214	75 520.833	34.54
SAF	Wind Onshore A Block 2 2030	3.68	60 208.333	28.567
GLF	Wind Onshore A Block 2 2030	2.867	60 208.333	27.633
CAS	Wind Onshore A Block 2 2030	1.695	75 520.833	32.987
CEE	Wind Onshore A Block 2 2030	0	73 333.333	36.454
NOE	Wind Onshore A Block 2 2030	0.78	75 520.833	35.82
BRI	Wind Onshore A Block 2 2030	0.001	73 333.333	30.773
USA	Wind Onshore A Block 2 2030	14.413	64 583.333	30.977
CAN	Wind Onshore A Block 2 2030	1.509	64 583.333	30.253
ANZ	Wind Onshore A Block 2 2030	1.466	55 833.333	27.505
PAC	Wind Onshore B Block 2 2030	0	68 958.333	33.437
SWA	Wind Onshore B Block 2 2030	3.44	62 083.333	31.91
SEA	Wind Onshore B Block 2 2030	12.258	62 083.333	32.833
SEE	Wind Onshore B Block 2 2030	0.001	75 833.333	29.067
IND	Wind Onshore B Block 2 2030	0.614	62 083.333	33.371
CHN	Wind Onshore B Block 2 2030	8.349	62 083.333	29.125
LEV	Wind Onshore B Block 2 2030	0.639	62 083.333	30.467

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAF	Wind Onshore B Block 2 2030	16.743	78 125	36.815
IRN	Wind Onshore B Block 2 2030	2.837	75 833.333	33.844
SWE	Wind Onshore B Block 2 2030	0.001	73 541.667	33.808
JSK	Wind Onshore B Block 2 2030	0	80 416.667	0
NAF	Wind Onshore B Block 2 2030	0.68	75 833.333	29.978
CEA	Wind Onshore B Block 2 2030	3.34	73 541.667	35.836
WAF	Wind Onshore B Block 2 2030	7.086	78 125	37.171
EAS	Wind Onshore B Block 2 2030	0.314	66 666.667	32.276
EAE	Wind Onshore B Block 2 2030	0.007	71 250	37.041
RUS	Wind Onshore B Block 2 2030	17.117	78 125	36.181
SAF	Wind Onshore B Block 2 2030	6.708	62 083.333	28.963
GLF	Wind Onshore B Block 2 2030	2.18	62 083.333	29.305
CAS	Wind Onshore B Block 2 2030	3.985	78 125	34.005
CEE	Wind Onshore B Block 2 2030	0	75 833.333	0
NOE	Wind Onshore B Block 2 2030	1.785	78 125	37.194
BRI	Wind Onshore B Block 2 2030	0	75 833.333	31.128
USA	Wind Onshore B Block 2 2030	3.729	66 666.667	30.849
CAN	Wind Onshore B Block 2 2030	10.874	66 666.667	31.818
ANZ	Wind Onshore B Block 2 2030	5.9	57 500	28.337
PAC	Wind Offshore Block 2 2030	4.445	108 333.333	37.374
SWA	Wind Offshore Block 2 2030	0.248	95 833.333	68.765
SEA	Wind Offshore Block 2 2030	7.84	95 833.333	78.731
SEE	Wind Offshore Block 2 2030	0.227	120 833.333	35.917
IND	Wind Offshore Block 2 2030	4.25	95 833.333	44.947
CHN	Wind Offshore Block 2 2030	1.806	95 833.333	30.652

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
LEV	Wind Offshore Block 2 2030	0.317	95 833.333	37.539
EAF	Wind Offshore Block 2 2030	2.422	125 000	50.303
IRN	Wind Offshore Block 2 2030	1.523	120 833.333	68.2
SWE	Wind Offshore Block 2 2030	0.473	116 666.667	37.096
JSK	Wind Offshore Block 2 2030	0	129 166.667	37.517
NAF	Wind Offshore Block 2 2030	0.091	120 833.333	36.493
CEA	Wind Offshore Block 2 2030	9.136	116 666.667	45.995
WAF	Wind Offshore Block 2 2030	0.752	125 000	53.028
EAS	Wind Offshore Block 2 2030	2.794	104 166.667	56.333
EAE	Wind Offshore Block 2 2030	0.011	112 500	31.252
RUS	Wind Offshore Block 2 2030	0.857	125 000	36.436
SAF	Wind Offshore Block 2 2030	0.015	95 833.333	30.733
GLF	Wind Offshore Block 2 2030	3.072	95 833.333	47.705
CAS	Wind Offshore Block 2 2030	0.437	125 000	34.281
CEE	Wind Offshore Block 2 2030	0	120 833.333	39.469
NOE	Wind Offshore Block 2 2030	0.02	125 000	39.291
BRI	Wind Offshore Block 2 2030	0	120 833.333	34.974
USA	Wind Offshore Block 2 2030	6.021	104 166.667	59.326
CAN	Wind Offshore Block 2 2030	0.171	104 166.667	30.187
ANZ	Wind Offshore Block 2 2030	1.122	87 500	35.35
PAC	PV Plant A Block 3 2030	10.838	41 666.667	24.323
SWA	PV Plant A Block 3 2030	23.961	38 541.667	22.896
SEA	PV Plant A Block 3 2030	76.265	38 541.667	23.17
SEE	PV Plant A Block 3 2030	17.08	41 666.667	24.739
IND	PV Plant A Block 3 2030	1.231	36 458.333	21.454

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CHN	PV Plant A Block 3 2030	37.695	36 458.333	21.584
LEV	PV Plant A Block 3 2030	0	37 500	0
EAF	PV Plant A Block 3 2030	25.283	46 875	25.66
IRN	PV Plant A Block 3 2030	1.573	45 833.333	25.112
SWE	PV Plant A Block 3 2030	18.962	37 500	23.331
JSK	PV Plant A Block 3 2030	0	52 083.333	29.028
NAF	PV Plant A Block 3 2030	0	45 833.333	0
CEA	PV Plant A Block 3 2030	9.417	41 666.667	23.917
WAF	PV Plant A Block 3 2030	16.59	46 875	26.098
EAS	PV Plant A Block 3 2030	19.355	41 666.667	23.337
EAE	PV Plant A Block 3 2030	8.48	41 666.667	26.368
RUS	PV Plant A Block 3 2030	25.767	47 916.667	28.014
SAF	PV Plant A Block 3 2030	24.561	39 583.333	24.539
GLF	PV Plant A Block 3 2030	0	36 458.333	0
CAS	PV Plant A Block 3 2030	6.131	45 833.333	26.088
CEE	PV Plant A Block 3 2030	0	41 666.667	25.74
NOE	PV Plant A Block 3 2030	0	41 666.667	0
BRI	PV Plant A Block 3 2030	0	39 583.333	0
USA	PV Plant A Block 3 2030	113.184	43 750	24.892
CAN	PV Plant A Block 3 2030	28.819	40 625	24.088
ANZ	PV Plant A Block 3 2030	1.575	37 500	23.444
PAC	PV Plant B Block 3 2030	2.817	43 750	26.32
SWA	PV Plant B Block 3 2030	22.81	40 312.5	23.99
SEA	PV Plant B Block 3 2030	126.863	40 312.5	23.942
SEE	PV Plant B Block 3 2030	0	43 750	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
IND	PV Plant B Block 3 2030	0.739	38 020.833	23.792
CHN	PV Plant B Block 3 2030	13.424	38 020.833	21.828
LEV	PV Plant B Block 3 2030	0	39 166.667	0
EAF	PV Plant B Block 3 2030	89.062	49 479.167	26.826
IRN	PV Plant B Block 3 2030	0	48 333.333	0
SWE	PV Plant B Block 3 2030	0.012	39 166.667	22.231
JSK	PV Plant B Block 3 2030	0	55 208.333	0
NAF	PV Plant B Block 3 2030	0	48 333.333	0
CEA	PV Plant B Block 3 2030	1.699	43 750	25.212
WAF	PV Plant B Block 3 2030	15.94	49 479.167	25.769
EAS	PV Plant B Block 3 2030	0.944	43 750	25.348
EAE	PV Plant B Block 3 2030	0.299	43 750	26.986
RUS	PV Plant B Block 3 2030	59.077	50 625	28.846
SAF	PV Plant B Block 3 2030	69.401	41 458.333	24.129
GLF	PV Plant B Block 3 2030	0	38 020.833	0
CAS	PV Plant B Block 3 2030	69.611	48 333.333	27.273
CEE	PV Plant B Block 3 2030	0	43 750	0
NOE	PV Plant B Block 3 2030	0	43 750	0
BRI	PV Plant B Block 3 2030	0	41 458.333	0
USA	PV Plant B Block 3 2030	4.669	46 041.667	24.209
CAN	PV Plant B Block 3 2030	20.237	42 604.167	25.242
ANZ	PV Plant B Block 3 2030	26.297	39 166.667	23.786
PAC	PV Rooftop Block 3 2030	13.873	43 750	24.548
SWA	PV Rooftop Block 3 2030	1.868	40 312.5	23.82
SEA	PV Rooftop Block 3 2030	2.241	40 312.5	23.593

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SEE	PV Rooftop Block 3 2030	2.391	43 750	25.478
IND	PV Rooftop Block 3 2030	12.228	38 020.833	22.113
CHN	PV Rooftop Block 3 2030	47.684	38 020.833	22.711
LEV	PV Rooftop Block 3 2030	0	39 166.667	0
EAF	PV Rooftop Block 3 2030	7.946	49 479.167	26.358
IRN	PV Rooftop Block 3 2030	0.464	48 333.333	26.734
SWE	PV Rooftop Block 3 2030	4.748	39 166.667	23.923
JSK	PV Rooftop Block 3 2030	0	55 208.333	30.673
NAF	PV Rooftop Block 3 2030	0	48 333.333	0
CEA	PV Rooftop Block 3 2030	1.25	43 750	24.513
WAF	PV Rooftop Block 3 2030	8.92	49 479.167	27.479
EAS	PV Rooftop Block 3 2030	16.954	43 750	24.165
EAE	PV Rooftop Block 3 2030	0.676	43 750	27.168
RUS	PV Rooftop Block 3 2030	1.123	50 625	28.987
SAF	PV Rooftop Block 3 2030	0.717	41 458.333	26.321
GLF	PV Rooftop Block 3 2030	0	38 020.833	0
CAS	PV Rooftop Block 3 2030	0.748	48 333.333	25.809
CEE	PV Rooftop Block 3 2030	0	43 750	27.444
NOE	PV Rooftop Block 3 2030	0	43 750	0
BRI	PV Rooftop Block 3 2030	0	41 458.333	0
USA	PV Rooftop Block 3 2030	9.199	46 041.667	26.665
CAN	PV Rooftop Block 3 2030	0.788	42 604.167	26.029
ANZ	PV Rooftop Block 3 2030	0.046	39 166.667	24.726
PAC	Wind Onshore A Block 3 2030	0	66 770.833	23.034
SWA	Wind Onshore A Block 3 2030	1.136	60 208.333	22.384

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SEA	Wind Onshore A Block 3 2030	10.468	60 208.333	22.093
SEE	Wind Onshore A Block 3 2030	0.572	73 333.333	25.904
IND	Wind Onshore A Block 3 2030	0.011	60 208.333	23.034
CHN	Wind Onshore A Block 3 2030	6.601	60 208.333	21.06
LEV	Wind Onshore A Block 3 2030	0.967	60 208.333	21.495
EAF	Wind Onshore A Block 3 2030	3.343	75 520.833	25.444
IRN	Wind Onshore A Block 3 2030	3.637	73 333.333	24.621
SWE	Wind Onshore A Block 3 2030	0.351	71 145.833	24.986
JSK	Wind Onshore A Block 3 2030	0	77 708.333	26.267
NAF	Wind Onshore A Block 3 2030	1.977	73 333.333	23.256
CEA	Wind Onshore A Block 3 2030	1.574	71 145.833	24.818
WAF	Wind Onshore A Block 3 2030	3.687	75 520.833	27.977
EAS	Wind Onshore A Block 3 2030	0	64 583.333	21.942
EAE	Wind Onshore A Block 3 2030	4.58	68 958.333	25.281
RUS	Wind Onshore A Block 3 2030	9.364	75 520.833	26.095
SAF	Wind Onshore A Block 3 2030	2.433	60 208.333	21.154
GLF	Wind Onshore A Block 3 2030	7.882	60 208.333	21.094
CAS	Wind Onshore A Block 3 2030	1.915	75 520.833	24.711
CEE	Wind Onshore A Block 3 2030	0	73 333.333	27.11
NOE	Wind Onshore A Block 3 2030	2.627	75 520.833	27.305
BRI	Wind Onshore A Block 3 2030	0.039	73 333.333	23.618
USA	Wind Onshore A Block 3 2030	14.743	64 583.333	22.763
CAN	Wind Onshore A Block 3 2030	4.736	64 583.333	22.386
ANZ	Wind Onshore A Block 3 2030	2.154	55 833.333	19.803
PAC	Wind Onshore B Block 3 2030	0	68 958.333	24.651

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SWA	Wind Onshore B Block 3 2030	1.698	62 083.333	22.956
SEA	Wind Onshore B Block 3 2030	9.496	62 083.333	22.451
SEE	Wind Onshore B Block 3 2030	0	75 833.333	23.255
IND	Wind Onshore B Block 3 2030	0.335	62 083.333	22.988
CHN	Wind Onshore B Block 3 2030	7.156	62 083.333	21.195
LEV	Wind Onshore B Block 3 2030	1.452	62 083.333	22.328
EAF	Wind Onshore B Block 3 2030	11.66	78 125	26.355
IRN	Wind Onshore B Block 3 2030	3.464	75 833.333	25.211
SWE	Wind Onshore B Block 3 2030	0.002	73 541.667	25.807
JSK	Wind Onshore B Block 3 2030	0	80 416.667	0
NAF	Wind Onshore B Block 3 2030	2.622	75 833.333	23.284
CEA	Wind Onshore B Block 3 2030	1.488	73 541.667	25.899
WAF	Wind Onshore B Block 3 2030	7.676	78 125	27.171
EAS	Wind Onshore B Block 3 2030	0	66 666.667	22.523
EAE	Wind Onshore B Block 3 2030	0.26	71 250	26.286
RUS	Wind Onshore B Block 3 2030	24.426	78 125	27.313
SAF	Wind Onshore B Block 3 2030	7.475	62 083.333	22.034
GLF	Wind Onshore B Block 3 2030	7.385	62 083.333	21.587
CAS	Wind Onshore B Block 3 2030	7.876	78 125	24.719
CEE	Wind Onshore B Block 3 2030	0	75 833.333	0
NOE	Wind Onshore B Block 3 2030	2.704	78 125	28.112
BRI	Wind Onshore B Block 3 2030	0.009	75 833.333	23.432
USA	Wind Onshore B Block 3 2030	2.963	66 666.667	23.224
CAN	Wind Onshore B Block 3 2030	17.095	66 666.667	23.487
ANZ	Wind Onshore B Block 3 2030	9.973	57 500	19.758

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
PAC	Wind Offshore Block 3 2030	3.342	108 333.333	53.636
SWA	Wind Offshore Block 3 2030	0.407	95 833.333	33.134
SEA	Wind Offshore Block 3 2030	2.245	95 833.333	30
SEE	Wind Offshore Block 3 2030	0.121	120 833.333	31.482
IND	Wind Offshore Block 3 2030	1.807	95 833.333	33.542
CHN	Wind Offshore Block 3 2030	13.991	95 833.333	44.701
LEV	Wind Offshore Block 3 2030	0.013	95 833.333	27.128
EAF	Wind Offshore Block 3 2030	0.565	125 000	29.815
IRN	Wind Offshore Block 3 2030	0.417	120 833.333	57.915
SWE	Wind Offshore Block 3 2030	0.827	116 666.667	31.17
JSK	Wind Offshore Block 3 2030	0	129 166.667	31.407
NAF	Wind Offshore Block 3 2030	1.593	120 833.333	34.854
CEA	Wind Offshore Block 3 2030	7.968	116 666.667	55.377
WAF	Wind Offshore Block 3 2030	0.199	125 000	29.563
EAS	Wind Offshore Block 3 2030	2.789	104 166.667	62.507
EAE	Wind Offshore Block 3 2030	1.564	112 500	32.372
RUS	Wind Offshore Block 3 2030	1.316	125 000	35.135
SAF	Wind Offshore Block 3 2030	0.074	95 833.333	23.092
GLF	Wind Offshore Block 3 2030	0.783	95 833.333	27.202
CAS	Wind Offshore Block 3 2030	1.291	125 000	29.256
CEE	Wind Offshore Block 3 2030	0	120 833.333	0
NOE	Wind Offshore Block 3 2030	0.165	125 000	29.808
BRI	Wind Offshore Block 3 2030	0.172	120 833.333	29.375
USA	Wind Offshore Block 3 2030	8.14	104 166.667	45.996
CAN	Wind Offshore Block 3 2030	2.022	104 166.667	25.808

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
ANZ	Wind Offshore Block 3 2030	6.033	87 500	24.429
PAC	PV Plant A Block 4 2030	0	41 666.667	21.411
SWA	PV Plant A Block 4 2030	26.702	38 541.667	20.036
SEA	PV Plant A Block 4 2030	36.65	38 541.667	20.099
SEE	PV Plant A Block 4 2030	22.86	41 666.667	20.877
IND	PV Plant A Block 4 2030	10.573	36 458.333	18.692
CHN	PV Plant A Block 4 2030	65.332	36 458.333	19.016
LEV	PV Plant A Block 4 2030	7.248	37 500	18.196
EAF	PV Plant A Block 4 2030	39.086	46 875	21.922
IRN	PV Plant A Block 4 2030	32.205	45 833.333	21.017
SWE	PV Plant A Block 4 2030	3.307	37 500	19.845
JSK	PV Plant A Block 4 2030	0	52 083.333	0
NAF	PV Plant A Block 4 2030	20.825	45 833.333	21.154
CEA	PV Plant A Block 4 2030	20.691	41 666.667	20.446
WAF	PV Plant A Block 4 2030	49.893	46 875	21.868
EAS	PV Plant A Block 4 2030	0	41 666.667	21.363
EAE	PV Plant A Block 4 2030	0	41 666.667	0
RUS	PV Plant A Block 4 2030	1.226	47 916.667	23.386
SAF	PV Plant A Block 4 2030	1.765	39 583.333	20.664
GLF	PV Plant A Block 4 2030	2.617	36 458.333	17.594
CAS	PV Plant A Block 4 2030	40.181	45 833.333	21.961
CEE	PV Plant A Block 4 2030	0	41 666.667	0
NOE	PV Plant A Block 4 2030	0	41 666.667	0
BRI	PV Plant A Block 4 2030	0	39 583.333	18.709
USA	PV Plant A Block 4 2030	71.617	43 750	21.202

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CAN	PV Plant A Block 4 2030	0.38	40 625	21.749
ANZ	PV Plant A Block 4 2030	0.43	37 500	20.417
PAC	PV Plant B Block 4 2030	0	43 750	21.629
SWA	PV Plant B Block 4 2030	27.909	40 312.5	20.26
SEA	PV Plant B Block 4 2030	33.18	40 312.5	21.002
SEE	PV Plant B Block 4 2030	0.023	43 750	21.568
IND	PV Plant B Block 4 2030	0.951	38 020.833	18.388
CHN	PV Plant B Block 4 2030	126.525	38 020.833	18.92
LEV	PV Plant B Block 4 2030	0.239	39 166.667	18.139
EAF	PV Plant B Block 4 2030	120.687	49 479.167	22.68
IRN	PV Plant B Block 4 2030	3.569	48 333.333	21.121
SWE	PV Plant B Block 4 2030	0.002	39 166.667	21.322
JSK	PV Plant B Block 4 2030	0	55 208.333	0
NAF	PV Plant B Block 4 2030	3.956	48 333.333	21.045
CEA	PV Plant B Block 4 2030	6.807	43 750	20.966
WAF	PV Plant B Block 4 2030	57.319	49 479.167	22.772
EAS	PV Plant B Block 4 2030	0.341	43 750	20.863
EAE	PV Plant B Block 4 2030	0	43 750	0
RUS	PV Plant B Block 4 2030	0.441	50 625	24.198
SAF	PV Plant B Block 4 2030	4.656	41 458.333	21.651
GLF	PV Plant B Block 4 2030	0.149	38 020.833	18.032
CAS	PV Plant B Block 4 2030	72.363	48 333.333	23.347
CEE	PV Plant B Block 4 2030	0	43 750	0
NOE	PV Plant B Block 4 2030	0	43 750	0
BRI	PV Plant B Block 4 2030	0	41 458.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
USA	PV Plant B Block 4 2030	28.368	46 041.667	21.949
CAN	PV Plant B Block 4 2030	1.579	42 604.167	22.37
ANZ	PV Plant B Block 4 2030	7.143	39 166.667	21.019
PAC	PV Rooftop Block 4 2030	0	43 750	22.113
SWA	PV Rooftop Block 4 2030	0.968	40 312.5	20.717
SEA	PV Rooftop Block 4 2030	1.175	40 312.5	20.727
SEE	PV Rooftop Block 4 2030	1.582	43 750	21.848
IND	PV Rooftop Block 4 2030	94.31	38 020.833	19.557
CHN	PV Rooftop Block 4 2030	3.445	38 020.833	20.168
LEV	PV Rooftop Block 4 2030	4.431	39 166.667	19.189
EAF	PV Rooftop Block 4 2030	13.67	49 479.167	23.136
IRN	PV Rooftop Block 4 2030	9.663	48 333.333	21.641
SWE	PV Rooftop Block 4 2030	1.257	39 166.667	20.311
JSK	PV Rooftop Block 4 2030	0	55 208.333	0
NAF	PV Rooftop Block 4 2030	4.016	48 333.333	22.96
CEA	PV Rooftop Block 4 2030	6.469	43 750	20.854
WAF	PV Rooftop Block 4 2030	3.739	49 479.167	22.684
EAS	PV Rooftop Block 4 2030	3.15	43 750	22.476
EAE	PV Rooftop Block 4 2030	0	43 750	0
RUS	PV Rooftop Block 4 2030	0.061	50 625	23.95
SAF	PV Rooftop Block 4 2030	0.015	41 458.333	20.777
GLF	PV Rooftop Block 4 2030	1.587	38 020.833	18.424
CAS	PV Rooftop Block 4 2030	2.94	48 333.333	22.821
CEE	PV Rooftop Block 4 2030	0	43 750	0
NOE	PV Rooftop Block 4 2030	0	43 750	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
BRI	PV Rooftop Block 4 2030	0	41 458.333	20.129
USA	PV Rooftop Block 4 2030	1.547	46 041.667	21.523
CAN	PV Rooftop Block 4 2030	0	42 604.167	22.491
ANZ	PV Rooftop Block 4 2030	0.005	39 166.667	21.061
PAC	Wind Onshore A Block 4 2030	0	66 770.833	17.933
SWA	Wind Onshore A Block 4 2030	0.525	60 208.333	17.381
SEA	Wind Onshore A Block 4 2030	5.453	60 208.333	17.136
SEE	Wind Onshore A Block 4 2030	0	73 333.333	20.341
IND	Wind Onshore A Block 4 2030	0	60 208.333	17.915
CHN	Wind Onshore A Block 4 2030	0	60 208.333	16.539
LEV	Wind Onshore A Block 4 2030	0.743	60 208.333	17.08
EAF	Wind Onshore A Block 4 2030	1.243	75 520.833	19.232
IRN	Wind Onshore A Block 4 2030	2.499	73 333.333	19.883
SWE	Wind Onshore A Block 4 2030	0	71 145.833	20.32
JSK	Wind Onshore A Block 4 2030	0	77 708.333	20.824
NAF	Wind Onshore A Block 4 2030	2.43	73 333.333	18.631
CEA	Wind Onshore A Block 4 2030	0.548	71 145.833	18.579
WAF	Wind Onshore A Block 4 2030	0.79	75 520.833	20.067
EAS	Wind Onshore A Block 4 2030	0	64 583.333	16.539
EAE	Wind Onshore A Block 4 2030	0.513	68 958.333	21.05
RUS	Wind Onshore A Block 4 2030	9.226	75 520.833	20.581
SAF	Wind Onshore A Block 4 2030	0	60 208.333	16.891
GLF	Wind Onshore A Block 4 2030	4.321	60 208.333	16.903
CAS	Wind Onshore A Block 4 2030	2.568	75 520.833	19.302
CEE	Wind Onshore A Block 4 2030	0	73 333.333	20.853

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
NOE	Wind Onshore A Block 4 2030	0.89	75 520.833	21.455
BRI	Wind Onshore A Block 4 2030	0.391	73 333.333	19.333
USA	Wind Onshore A Block 4 2030	8.868	64 583.333	17.758
CAN	Wind Onshore A Block 4 2030	4.671	64 583.333	17.743
ANZ	Wind Onshore A Block 4 2030	1.438	55 833.333	16.08
PAC	Wind Onshore B Block 4 2030	0	68 958.333	19.358
SWA	Wind Onshore B Block 4 2030	0.969	62 083.333	18.231
SEA	Wind Onshore B Block 4 2030	6.047	62 083.333	17.226
SEE	Wind Onshore B Block 4 2030	0	75 833.333	19.319
IND	Wind Onshore B Block 4 2030	0.184	62 083.333	17.696
CHN	Wind Onshore B Block 4 2030	8.248	62 083.333	16.622
LEV	Wind Onshore B Block 4 2030	2.275	62 083.333	17.463
EAF	Wind Onshore B Block 4 2030	5.69	78 125	19.596
IRN	Wind Onshore B Block 4 2030	3.525	75 833.333	20.07
SWE	Wind Onshore B Block 4 2030	0	73 541.667	20.282
JSK	Wind Onshore B Block 4 2030	0	80 416.667	0
NAF	Wind Onshore B Block 4 2030	9.975	75 833.333	18.675
CEA	Wind Onshore B Block 4 2030	0.398	73 541.667	19.796
WAF	Wind Onshore B Block 4 2030	6.236	78 125	20.853
EAS	Wind Onshore B Block 4 2030	0	66 666.667	17.671
EAE	Wind Onshore B Block 4 2030	0.187	71 250	21.069
RUS	Wind Onshore B Block 4 2030	6.817	78 125	20.269
SAF	Wind Onshore B Block 4 2030	0	62 083.333	17.433
GLF	Wind Onshore B Block 4 2030	2.841	62 083.333	17.142
CAS	Wind Onshore B Block 4 2030	17.123	78 125	20.002

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CEE	Wind Onshore B Block 4 2030	0	75 833.333	0
NOE	Wind Onshore B Block 4 2030	0.967	78 125	20.991
BRI	Wind Onshore B Block 4 2030	0.048	75 833.333	19.299
USA	Wind Onshore B Block 4 2030	2.922	66 666.667	18.212
CAN	Wind Onshore B Block 4 2030	7.349	66 666.667	18.048
ANZ	Wind Onshore B Block 4 2030	7.919	57 500	16.175
PAC	Wind Offshore Block 4 2030	0.592	108 333.333	24.357
SWA	Wind Offshore Block 4 2030	0.367	95 833.333	21.235
SEA	Wind Offshore Block 4 2030	8.12	95 833.333	38.324
SEE	Wind Offshore Block 4 2030	0.047	120 833.333	24.575
IND	Wind Offshore Block 4 2030	0.224	95 833.333	20.783
CHN	Wind Offshore Block 4 2030	3.74	95 833.333	32.927
LEV	Wind Offshore Block 4 2030	0.008	95 833.333	20.563
EAF	Wind Offshore Block 4 2030	0.216	125 000	24.552
IRN	Wind Offshore Block 4 2030	0	120 833.333	0
SWE	Wind Offshore Block 4 2030	0.904	116 666.667	30.586
JSK	Wind Offshore Block 4 2030	0	129 166.667	27.05
NAF	Wind Offshore Block 4 2030	0.126	120 833.333	26.608
CEA	Wind Offshore Block 4 2030	1.25	116 666.667	43.944
WAF	Wind Offshore Block 4 2030	0.066	125 000	22.096
EAS	Wind Offshore Block 4 2030	0.492	104 166.667	83.444
EAE	Wind Offshore Block 4 2030	1.376	112 500	30.422
RUS	Wind Offshore Block 4 2030	6.082	125 000	25.669
SAF	Wind Offshore Block 4 2030	0.05	95 833.333	22.31
GLF	Wind Offshore Block 4 2030	0.316	95 833.333	29.33

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CAS	Wind Offshore Block 4 2030	0.563	125 000	24.5
CEE	Wind Offshore Block 4 2030	0	120 833.333	23.722
NOE	Wind Offshore Block 4 2030	2.015	125 000	26.349
BRI	Wind Offshore Block 4 2030	0.125	120 833.333	23.765
USA	Wind Offshore Block 4 2030	8.019	104 166.667	25.205
CAN	Wind Offshore Block 4 2030	6.141	104 166.667	21.576
ANZ	Wind Offshore Block 4 2030	5.931	87 500	22.046
PAC	PV Plant A Block 5 2030	0	41 666.667	0
SWA	PV Plant A Block 5 2030	0.302	38 541.667	17.51
SEA	PV Plant A Block 5 2030	0.1	38 541.667	17.517
SEE	PV Plant A Block 5 2030	0	41 666.667	0
IND	PV Plant A Block 5 2030	0	36 458.333	16.696
CHN	PV Plant A Block 5 2030	0	36 458.333	16.502
LEV	PV Plant A Block 5 2030	3.641	37 500	16.606
EAF	PV Plant A Block 5 2030	22.177	46 875	19.318
IRN	PV Plant A Block 5 2030	47.495	45 833.333	18.944
SWE	PV Plant A Block 5 2030	0	37 500	17.403
JSK	PV Plant A Block 5 2030	0	52 083.333	0
NAF	PV Plant A Block 5 2030	21.296	45 833.333	19.216
CEA	PV Plant A Block 5 2030	13.445	41 666.667	17.943
WAF	PV Plant A Block 5 2030	29.84	46 875	19.524
EAS	PV Plant A Block 5 2030	0	41 666.667	18.216
EAE	PV Plant A Block 5 2030	0	41 666.667	0
RUS	PV Plant A Block 5 2030	0	47 916.667	0
SAF	PV Plant A Block 5 2030	0	39 583.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
GLF	PV Plant A Block 5 2030	84.749	36 458.333	16.118
CAS	PV Plant A Block 5 2030	7.542	45 833.333	18.549
CEE	PV Plant A Block 5 2030	0	41 666.667	0
NOE	PV Plant A Block 5 2030	0	41 666.667	0
BRI	PV Plant A Block 5 2030	0	39 583.333	0
USA	PV Plant A Block 5 2030	43.222	43 750	18.525
CAN	PV Plant A Block 5 2030	0	40 625	0
ANZ	PV Plant A Block 5 2030	0	37 500	0
PAC	PV Plant B Block 5 2030	0	43 750	0
SWA	PV Plant B Block 5 2030	0.057	40 312.5	17.946
SEA	PV Plant B Block 5 2030	0	40 312.5	0
SEE	PV Plant B Block 5 2030	0	43 750	0
IND	PV Plant B Block 5 2030	0	38 020.833	16.132
CHN	PV Plant B Block 5 2030	3.611	38 020.833	16.549
LEV	PV Plant B Block 5 2030	32.317	39 166.667	16.574
EAF	PV Plant B Block 5 2030	81.704	49 479.167	19.99
IRN	PV Plant B Block 5 2030	67.98	48 333.333	19.474
SWE	PV Plant B Block 5 2030	0	39 166.667	0
JSK	PV Plant B Block 5 2030	0	55 208.333	0
NAF	PV Plant B Block 5 2030	92.371	48 333.333	19.696
CEA	PV Plant B Block 5 2030	36.076	43 750	18.496
WAF	PV Plant B Block 5 2030	105.68	49 479.167	19.826
EAS	PV Plant B Block 5 2030	0	43 750	18.16
EAE	PV Plant B Block 5 2030	0	43 750	0
RUS	PV Plant B Block 5 2030	0	50 625	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SAF	PV Plant B Block 5 2030	0	41 458.333	0
GLF	PV Plant B Block 5 2030	74.194	38 020.833	16.422
CAS	PV Plant B Block 5 2030	41.471	48 333.333	19.137
CEE	PV Plant B Block 5 2030	0	43 750	0
NOE	PV Plant B Block 5 2030	0	43 750	0
BRI	PV Plant B Block 5 2030	0	41 458.333	0
USA	PV Plant B Block 5 2030	27.455	46 041.667	19.222
CAN	PV Plant B Block 5 2030	0	42 604.167	0
ANZ	PV Plant B Block 5 2030	0	39 166.667	0
PAC	PV Rooftop Block 5 2030	0	43 750	0
SWA	PV Rooftop Block 5 2030	0	40 312.5	0
SEA	PV Rooftop Block 5 2030	0.039	40 312.5	18.103
SEE	PV Rooftop Block 5 2030	0	43 750	0
IND	PV Rooftop Block 5 2030	0	38 020.833	17.504
CHN	PV Rooftop Block 5 2030	0	38 020.833	17.489
LEV	PV Rooftop Block 5 2030	1.402	39 166.667	17.02
EAF	PV Rooftop Block 5 2030	1.471	49 479.167	19.961
IRN	PV Rooftop Block 5 2030	7.422	48 333.333	20.2
SWE	PV Rooftop Block 5 2030	0	39 166.667	17.925
JSK	PV Rooftop Block 5 2030	0	55 208.333	0
NAF	PV Rooftop Block 5 2030	0.115	48 333.333	20.532
CEA	PV Rooftop Block 5 2030	1.053	43 750	18.857
WAF	PV Rooftop Block 5 2030	6.838	49 479.167	20.409
EAS	PV Rooftop Block 5 2030	0	43 750	0
EAE	PV Rooftop Block 5 2030	0	43 750	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
RUS	PV Rooftop Block 5 2030	0	50 625	0
SAF	PV Rooftop Block 5 2030	0	41 458.333	0
GLF	PV Rooftop Block 5 2030	1.478	38 020.833	17.043
CAS	PV Rooftop Block 5 2030	0.71	48 333.333	19.518
CEE	PV Rooftop Block 5 2030	0	43 750	0
NOE	PV Rooftop Block 5 2030	0	43 750	0
BRI	PV Rooftop Block 5 2030	0	41 458.333	0
USA	PV Rooftop Block 5 2030	1.293	46 041.667	19.33
CAN	PV Rooftop Block 5 2030	0	42 604.167	0
ANZ	PV Rooftop Block 5 2030	0	39 166.667	0
PAC	Wind Onshore A Block 5 2030	0	66 770.833	13.969
SWA	Wind Onshore A Block 5 2030	0.389	60 208.333	12.345
SEA	Wind Onshore A Block 5 2030	1.886	60 208.333	12.921
SEE	Wind Onshore A Block 5 2030	0	73 333.333	16.626
IND	Wind Onshore A Block 5 2030	0	60 208.333	13.632
CHN	Wind Onshore A Block 5 2030	0	60 208.333	13.217
LEV	Wind Onshore A Block 5 2030	0.328	60 208.333	13.452
EAF	Wind Onshore A Block 5 2030	0.213	75 520.833	14.659
IRN	Wind Onshore A Block 5 2030	0	73 333.333	16.031
SWE	Wind Onshore A Block 5 2030	0	71 145.833	16.587
JSK	Wind Onshore A Block 5 2030	0	77 708.333	17.075
NAF	Wind Onshore A Block 5 2030	0	73 333.333	15.909
CEA	Wind Onshore A Block 5 2030	0	71 145.833	14.018
WAF	Wind Onshore A Block 5 2030	0	75 520.833	14.99
EAS	Wind Onshore A Block 5 2030	0	64 583.333	13.272

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAE	Wind Onshore A Block 5 2030	0	68 958.333	17.878
RUS	Wind Onshore A Block 5 2030	0	75 520.833	16.875
SAF	Wind Onshore A Block 5 2030	0	60 208.333	13.641
GLF	Wind Onshore A Block 5 2030	0.689	60 208.333	13.717
CAS	Wind Onshore A Block 5 2030	0	75 520.833	16.019
CEE	Wind Onshore A Block 5 2030	0	73 333.333	17.004
NOE	Wind Onshore A Block 5 2030	0.375	75 520.833	16.482
BRI	Wind Onshore A Block 5 2030	0	73 333.333	15.703
USA	Wind Onshore A Block 5 2030	0	64 583.333	14.882
CAN	Wind Onshore A Block 5 2030	0.148	64 583.333	14.332
ANZ	Wind Onshore A Block 5 2030	0.136	55 833.333	13.359
PAC	Wind Onshore B Block 5 2030	0	68 958.333	15.2
SWA	Wind Onshore B Block 5 2030	0.173	62 083.333	12.514
SEA	Wind Onshore B Block 5 2030	0.922	62 083.333	12.875
SEE	Wind Onshore B Block 5 2030	0	75 833.333	16.639
IND	Wind Onshore B Block 5 2030	0	62 083.333	13.341
CHN	Wind Onshore B Block 5 2030	0	62 083.333	13.583
LEV	Wind Onshore B Block 5 2030	1.436	62 083.333	13.723
EAF	Wind Onshore B Block 5 2030	4.093	78 125	14.714
IRN	Wind Onshore B Block 5 2030	0	75 833.333	16.288
SWE	Wind Onshore B Block 5 2030	0	73 541.667	14.971
JSK	Wind Onshore B Block 5 2030	0	80 416.667	15.534
NAF	Wind Onshore B Block 5 2030	3.017	75 833.333	16.108
CEA	Wind Onshore B Block 5 2030	0	73 541.667	15.848
WAF	Wind Onshore B Block 5 2030	2.732	78 125	15.362

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAS	Wind Onshore B Block 5 2030	0	66 666.667	13.276
EAE	Wind Onshore B Block 5 2030	0	71 250	17.521
RUS	Wind Onshore B Block 5 2030	0	78 125	17.077
SAF	Wind Onshore B Block 5 2030	0	62 083.333	14.282
GLF	Wind Onshore B Block 5 2030	0.012	62 083.333	13.608
CAS	Wind Onshore B Block 5 2030	4.429	78 125	16.289
CEE	Wind Onshore B Block 5 2030	0	75 833.333	0
NOE	Wind Onshore B Block 5 2030	0.11	78 125	16.408
BRI	Wind Onshore B Block 5 2030	0	75 833.333	14.78
USA	Wind Onshore B Block 5 2030	0	66 666.667	14.866
CAN	Wind Onshore B Block 5 2030	0.582	66 666.667	14.456
ANZ	Wind Onshore B Block 5 2030	0	57 500	13.002
PAC	Wind Offshore Block 5 2030	0.011	108 333.333	16.88
SWA	Wind Offshore Block 5 2030	0.704	95 833.333	14.985
SEA	Wind Offshore Block 5 2030	5.392	95 833.333	22.628
SEE	Wind Offshore Block 5 2030	0.005	120 833.333	21.454
IND	Wind Offshore Block 5 2030	0.151	95 833.333	26.048
CHN	Wind Offshore Block 5 2030	1.423	95 833.333	38.116
LEV	Wind Offshore Block 5 2030	0.077	95 833.333	16.036
EAF	Wind Offshore Block 5 2030	0.379	125 000	25.697
IRN	Wind Offshore Block 5 2030	0	120 833.333	0
SWE	Wind Offshore Block 5 2030	0.472	116 666.667	36.863
JSK	Wind Offshore Block 5 2030	0	129 166.667	22.677
NAF	Wind Offshore Block 5 2030	0.023	120 833.333	21.089
CEA	Wind Offshore Block 5 2030	0.11	116 666.667	20.238

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
WAF	Wind Offshore Block 5 2030	0.311	125 000	19.266
EAS	Wind Offshore Block 5 2030	0.44	104 166.667	29.199
EAE	Wind Offshore Block 5 2030	1.239	112 500	26.034
RUS	Wind Offshore Block 5 2030	0.798	125 000	33.502
SAF	Wind Offshore Block 5 2030	0.039	95 833.333	17.679
GLF	Wind Offshore Block 5 2030	0.113	95 833.333	15.622
CAS	Wind Offshore Block 5 2030	0.007	125 000	25.562
CEE	Wind Offshore Block 5 2030	3.081	120 833.333	52.485
NOE	Wind Offshore Block 5 2030	4.474	125 000	29.873
BRI	Wind Offshore Block 5 2030	4.155	120 833.333	31.564
USA	Wind Offshore Block 5 2030	5.056	104 166.667	24.425
CAN	Wind Offshore Block 5 2030	4.487	104 166.667	19.568
ANZ	Wind Offshore Block 5 2030	2.54	87 500	17.946
PAC	PV Plant A Block 1 2050	0	20 833.333	0
SWA	PV Plant A Block 1 2050	1.72	18 958.333	17.142
SEA	PV Plant A Block 1 2050	24.907	18 958.333	16.401
SEE	PV Plant A Block 1 2050	0	20 833.333	0
IND	PV Plant A Block 1 2050	0	18 958.333	0
CHN	PV Plant A Block 1 2050	0.305	17 708.333	15.06
LEV	PV Plant A Block 1 2050	0	18 958.333	0
EAF	PV Plant A Block 1 2050	0	23 958.333	0
IRN	PV Plant A Block 1 2050	0	23 333.333	0
SWE	PV Plant A Block 1 2050	0	18 333.333	0
JSK	PV Plant A Block 1 2050	0	27 083.333	0
NAF	PV Plant A Block 1 2050	0	23 333.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CEA	PV Plant A Block 1 2050	0	20 833.333	0
WAF	PV Plant A Block 1 2050	0	23 958.333	0
EAS	PV Plant A Block 1 2050	0	20 833.333	0
EAE	PV Plant A Block 1 2050	0.004	20 833.333	16.385
RUS	PV Plant A Block 1 2050	2.295	24 583.333	19.818
SAF	PV Plant A Block 1 2050	2.133	18 958.333	15.672
GLF	PV Plant A Block 1 2050	0	18 333.333	0
CAS	PV Plant A Block 1 2050	0	23 333.333	0
CEE	PV Plant A Block 1 2050	0	20 833.333	0
NOE	PV Plant A Block 1 2050	3.229	20 833.333	18.866
BRI	PV Plant A Block 1 2050	5.143	19 583.333	16.602
USA	PV Plant A Block 1 2050	0.538	22 083.333	18.586
CAN	PV Plant A Block 1 2050	0.253	20 208.333	16.845
ANZ	PV Plant A Block 1 2050	10.222	18 333.333	17.376
PAC	PV Plant B Block 1 2050	0.005	22 083.333	17.238
SWA	PV Plant B Block 1 2050	1.772	20 020.833	21.351
SEA	PV Plant B Block 1 2050	53.497	20 020.833	18.248
SEE	PV Plant B Block 1 2050	0	22 083.333	0
IND	PV Plant B Block 1 2050	0	20 020.833	0
CHN	PV Plant B Block 1 2050	0	18 645.833	0
LEV	PV Plant B Block 1 2050	0	20 020.833	0
EAF	PV Plant B Block 1 2050	0	25 520.833	0
IRN	PV Plant B Block 1 2050	0	24 833.333	0
SWE	PV Plant B Block 1 2050	0	19 333.333	0
JSK	PV Plant B Block 1 2050	0	28 958.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
NAF	PV Plant B Block 1 2050	0	24 833.333	0
CEA	PV Plant B Block 1 2050	0	22 083.333	0
WAF	PV Plant B Block 1 2050	0	25 520.833	0
EAS	PV Plant B Block 1 2050	0	22 083.333	0
EAE	PV Plant B Block 1 2050	0	22 083.333	0
RUS	PV Plant B Block 1 2050	39.762	26 208.333	21.312
SAF	PV Plant B Block 1 2050	0.175	20 020.833	15.967
GLF	PV Plant B Block 1 2050	0	19 333.333	0
CAS	PV Plant B Block 1 2050	0	24 833.333	0
CEE	PV Plant B Block 1 2050	0	22 083.333	0
NOE	PV Plant B Block 1 2050	13.632	22 083.333	21.075
BRI	PV Plant B Block 1 2050	0.975	20 708.333	18.342
USA	PV Plant B Block 1 2050	3.648	23 458.333	21.102
CAN	PV Plant B Block 1 2050	7.569	21 395.833	17.658
ANZ	PV Plant B Block 1 2050	17.453	19 333.333	18.693
PAC	PV Rooftop Block 1 2050	0	22 083.333	0
SWA	PV Rooftop Block 1 2050	0.186	20 020.833	17.52
SEA	PV Rooftop Block 1 2050	0.774	20 020.833	16.546
SEE	PV Rooftop Block 1 2050	0	22 083.333	0
IND	PV Rooftop Block 1 2050	0	20 020.833	0
CHN	PV Rooftop Block 1 2050	3.126	18 645.833	15.604
LEV	PV Rooftop Block 1 2050	0	20 020.833	0
EAF	PV Rooftop Block 1 2050	0	25 520.833	0
IRN	PV Rooftop Block 1 2050	0	24 833.333	0
SWE	PV Rooftop Block 1 2050	0	19 333.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
JSK	PV Rooftop Block 1 2050	0	28 958.333	0
NAF	PV Rooftop Block 1 2050	0	24 833.333	0
CEA	PV Rooftop Block 1 2050	0	22 083.333	0
WAF	PV Rooftop Block 1 2050	0	25 520.833	0
EAS	PV Rooftop Block 1 2050	0	22 083.333	0
EAE	PV Rooftop Block 1 2050	0.003	22 083.333	17.118
RUS	PV Rooftop Block 1 2050	0.306	26 208.333	20.5
SAF	PV Rooftop Block 1 2050	0.472	20 020.833	16.358
GLF	PV Rooftop Block 1 2050	0	19 333.333	0
CAS	PV Rooftop Block 1 2050	0	24 833.333	0
CEE	PV Rooftop Block 1 2050	0	22 083.333	0
NOE	PV Rooftop Block 1 2050	0.18	22 083.333	18.153
BRI	PV Rooftop Block 1 2050	0.81	20 708.333	16.88
USA	PV Rooftop Block 1 2050	0.013	23 458.333	18.147
CAN	PV Rooftop Block 1 2050	0	21 395.833	0
ANZ	PV Rooftop Block 1 2050	0.689	19 333.333	17.985
PAC	Wind Onshore A Block 1 2050	11.937	43 333.333	70.494
SWA	Wind Onshore A Block 1 2050	10.358	38 333.333	49.132
SEA	Wind Onshore A Block 1 2050	17.851	38 333.333	41.09
SEE	Wind Onshore A Block 1 2050	5.184	48 333.333	42.297
IND	Wind Onshore A Block 1 2050	4.232	38 333.333	39.081
CHN	Wind Onshore A Block 1 2050	13.325	38 333.333	34.616
LEV	Wind Onshore A Block 1 2050	0.198	38 333.333	26.583
EAF	Wind Onshore A Block 1 2050	9.571	50 000	47.566
IRN	Wind Onshore A Block 1 2050	5.138	48 333.333	38.437

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SWE	Wind Onshore A Block 1 2050	2.149	46 666.667	35.793
JSK	Wind Onshore A Block 1 2050	0	51 666.667	34.863
NAF	Wind Onshore A Block 1 2050	1.186	48 333.333	31.251
CEA	Wind Onshore A Block 1 2050	9.186	46 666.667	47.799
WAF	Wind Onshore A Block 1 2050	19.395	50 000	53.829
EAS	Wind Onshore A Block 1 2050	7.885	41 666.667	45.75
EAE	Wind Onshore A Block 1 2050	0.846	45 000	37.417
RUS	Wind Onshore A Block 1 2050	2.008	50 000	43.762
SAF	Wind Onshore A Block 1 2050	2	36 666.667	26.826
GLF	Wind Onshore A Block 1 2050	1.561	38 333.333	28.284
CAS	Wind Onshore A Block 1 2050	3.256	50 000	44.049
CEE	Wind Onshore A Block 1 2050	0	48 333.333	43.51
NOE	Wind Onshore A Block 1 2050	0.238	50 000	36.155
BRI	Wind Onshore A Block 1 2050	0	48 333.333	27.946
USA	Wind Onshore A Block 1 2050	8.528	41 666.667	30.494
CAN	Wind Onshore A Block 1 2050	0.858	41 666.667	35.272
ANZ	Wind Onshore A Block 1 2050	0.883	35 000	25.743
PAC	Wind Onshore B Block 1 2050	10.442	47 708.333	81.677
SWA	Wind Onshore B Block 1 2050	16.778	42 083.333	52.651
SEA	Wind Onshore B Block 1 2050	38.849	42 083.333	53.119
SEE	Wind Onshore B Block 1 2050	0.005	53 333.333	61.286
IND	Wind Onshore B Block 1 2050	0.963	42 083.333	55.006
CHN	Wind Onshore B Block 1 2050	6.887	42 083.333	31.33
LEV	Wind Onshore B Block 1 2050	0.042	42 083.333	26.418
EAF	Wind Onshore B Block 1 2050	26.897	55 208.333	45.788

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
IRN	Wind Onshore B Block 1 2050	1.943	53 333.333	35.99
SWE	Wind Onshore B Block 1 2050	0	51 458.333	24.798
JSK	Wind Onshore B Block 1 2050	0	57 083.333	0
NAF	Wind Onshore B Block 1 2050	0.029	53 333.333	26.416
CEA	Wind Onshore B Block 1 2050	6.297	51 458.333	44.409
WAF	Wind Onshore B Block 1 2050	43.15	55 208.333	71.606
EAS	Wind Onshore B Block 1 2050	3.844	45 833.333	73.136
EAE	Wind Onshore B Block 1 2050	0	49 583.333	0
RUS	Wind Onshore B Block 1 2050	10.264	55 208.333	39.087
SAF	Wind Onshore B Block 1 2050	1.042	40 208.333	25.311
GLF	Wind Onshore B Block 1 2050	0.637	42 083.333	29.536
CAS	Wind Onshore B Block 1 2050	4.329	55 208.333	43.428
CEE	Wind Onshore B Block 1 2050	0	53 333.333	0
NOE	Wind Onshore B Block 1 2050	0.29	55 208.333	37.669
BRI	Wind Onshore B Block 1 2050	0	53 333.333	0
USA	Wind Onshore B Block 1 2050	2.376	45 833.333	31.13
CAN	Wind Onshore B Block 1 2050	5.777	45 833.333	34.525
ANZ	Wind Onshore B Block 1 2050	2.174	38 333.333	26.682
PAC	Wind Offshore Block 1 2050	50.877	63 020.833	63.893
SWA	Wind Offshore Block 1 2050	1.161	55 208.333	35.707
SEA	Wind Offshore Block 1 2050	5.856	55 208.333	42.974
SEE	Wind Offshore Block 1 2050	0.412	70 833.333	36.648
IND	Wind Offshore Block 1 2050	4.246	55 208.333	38.709
CHN	Wind Offshore Block 1 2050	0.321	55 208.333	25.641
LEV	Wind Offshore Block 1 2050	0.443	55 208.333	27.407

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAF	Wind Offshore Block 1 2050	9.012	73 437.5	42.687
IRN	Wind Offshore Block 1 2050	1.493	70 833.333	34.201
SWE	Wind Offshore Block 1 2050	0.793	68 229.167	31.639
JSK	Wind Offshore Block 1 2050	0	76 041.667	33.972
NAF	Wind Offshore Block 1 2050	0.058	70 833.333	29.914
CEA	Wind Offshore Block 1 2050	2.919	68 229.167	36.731
WAF	Wind Offshore Block 1 2050	8.36	73 437.5	77.296
EAS	Wind Offshore Block 1 2050	17.706	60 416.667	54.951
EAE	Wind Offshore Block 1 2050	0	65 625	23.175
RUS	Wind Offshore Block 1 2050	0.619	73 437.5	28.728
SAF	Wind Offshore Block 1 2050	0.054	52 604.167	23.246
GLF	Wind Offshore Block 1 2050	5.887	55 208.333	33.986
CAS	Wind Offshore Block 1 2050	0.595	73 437.5	33.9
CEE	Wind Offshore Block 1 2050	0.002	70 833.333	43.683
NOE	Wind Offshore Block 1 2050	0.005	73 437.5	29.632
BRI	Wind Offshore Block 1 2050	0	70 833.333	0
USA	Wind Offshore Block 1 2050	1.079	60 416.667	55.257
CAN	Wind Offshore Block 1 2050	0.008	60 416.667	26.331
ANZ	Wind Offshore Block 1 2050	2.207	50 000	25.884
PAC	PV Plant A Block 2 2050	0.603	20 833.333	13.639
SWA	PV Plant A Block 2 2050	7.127	18 958.333	13.003
SEA	PV Plant A Block 2 2050	82.902	18 958.333	13.558
SEE	PV Plant A Block 2 2050	1.359	20 833.333	13.014
IND	PV Plant A Block 2 2050	0.071	18 958.333	12.526
CHN	PV Plant A Block 2 2050	6.06	17 708.333	12.252

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
LEV	PV Plant A Block 2 2050	0	18 958.333	0
EAF	PV Plant A Block 2 2050	2.998	23 958.333	14.93
IRN	PV Plant A Block 2 2050	0	23 333.333	0
SWE	PV Plant A Block 2 2050	10.344	18 333.333	12.054
JSK	PV Plant A Block 2 2050	0	27 083.333	15.825
NAF	PV Plant A Block 2 2050	0	23 333.333	0
CEA	PV Plant A Block 2 2050	0.676	20 833.333	12.939
WAF	PV Plant A Block 2 2050	1.139	23 958.333	14.669
EAS	PV Plant A Block 2 2050	0.801	20 833.333	13.853
EAE	PV Plant A Block 2 2050	43.836	20 833.333	13.752
RUS	PV Plant A Block 2 2050	65.835	24 583.333	15.791
SAF	PV Plant A Block 2 2050	21.267	18 958.333	13.032
GLF	PV Plant A Block 2 2050	0	18 333.333	0
CAS	PV Plant A Block 2 2050	4.027	23 333.333	14.856
CEE	PV Plant A Block 2 2050	0	20 833.333	13.648
NOE	PV Plant A Block 2 2050	1.508	20 833.333	14.942
BRI	PV Plant A Block 2 2050	1.179	19 583.333	14.588
USA	PV Plant A Block 2 2050	6.933	22 083.333	14.042
CAN	PV Plant A Block 2 2050	6.747	20 208.333	13.182
ANZ	PV Plant A Block 2 2050	8.204	18 333.333	13.767
PAC	PV Plant B Block 2 2050	1.809	22 083.333	14.168
SWA	PV Plant B Block 2 2050	4.991	20 020.833	12.828
SEA	PV Plant B Block 2 2050	54.482	20 020.833	14.123
SEE	PV Plant B Block 2 2050	0	22 083.333	0
IND	PV Plant B Block 2 2050	0.241	20 020.833	12.958

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CHN	PV Plant B Block 2 2050	0.041	18 645.833	12.034
LEV	PV Plant B Block 2 2050	0	20 020.833	0
EAF	PV Plant B Block 2 2050	6.924	25 520.833	15.294
IRN	PV Plant B Block 2 2050	0	24 833.333	0
SWE	PV Plant B Block 2 2050	0	19 333.333	0
JSK	PV Plant B Block 2 2050	0	28 958.333	0
NAF	PV Plant B Block 2 2050	0	24 833.333	0
CEA	PV Plant B Block 2 2050	0.171	22 083.333	13.49
WAF	PV Plant B Block 2 2050	1.232	25 520.833	15.353
EAS	PV Plant B Block 2 2050	0.039	22 083.333	14.202
EAE	PV Plant B Block 2 2050	1.234	22 083.333	14.304
RUS	PV Plant B Block 2 2050	73.581	26 208.333	16.835
SAF	PV Plant B Block 2 2050	20.209	20 020.833	13.19
GLF	PV Plant B Block 2 2050	0	19 333.333	0
CAS	PV Plant B Block 2 2050	31.25	24 833.333	15.443
CEE	PV Plant B Block 2 2050	0	22 083.333	0
NOE	PV Plant B Block 2 2050	3.142	22 083.333	16.09
BRI	PV Plant B Block 2 2050	0.07	20 708.333	16.062
USA	PV Plant B Block 2 2050	4.912	23 458.333	16.724
CAN	PV Plant B Block 2 2050	53.147	21 395.833	14.519
ANZ	PV Plant B Block 2 2050	62.835	19 333.333	13.621
PAC	PV Rooftop Block 2 2050	0.085	22 083.333	13.512
SWA	PV Rooftop Block 2 2050	0.943	20 020.833	13.628
SEA	PV Rooftop Block 2 2050	4.04	20 020.833	13.864
SEE	PV Rooftop Block 2 2050	0.203	22 083.333	13.723

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
IND	PV Rooftop Block 2 2050	0.279	20 020.833	12.833
CHN	PV Rooftop Block 2 2050	33.435	18 645.833	12.964
LEV	PV Rooftop Block 2 2050	0	20 020.833	0
EAF	PV Rooftop Block 2 2050	0.5	25 520.833	15.818
IRN	PV Rooftop Block 2 2050	0	24 833.333	0
SWE	PV Rooftop Block 2 2050	1.43	19 333.333	12.596
JSK	PV Rooftop Block 2 2050	0	28 958.333	16.705
NAF	PV Rooftop Block 2 2050	0	24 833.333	0
CEA	PV Rooftop Block 2 2050	0.001	22 083.333	13.313
WAF	PV Rooftop Block 2 2050	1.715	25 520.833	15.128
EAS	PV Rooftop Block 2 2050	2.127	22 083.333	14.972
EAE	PV Rooftop Block 2 2050	3.821	22 083.333	14.249
RUS	PV Rooftop Block 2 2050	2.813	26 208.333	16.983
SAF	PV Rooftop Block 2 2050	1.148	20 020.833	13.834
GLF	PV Rooftop Block 2 2050	0	19 333.333	0
CAS	PV Rooftop Block 2 2050	0.105	24 833.333	15.406
CEE	PV Rooftop Block 2 2050	0	22 083.333	14.164
NOE	PV Rooftop Block 2 2050	0.753	22 083.333	15.36
BRI	PV Rooftop Block 2 2050	1.888	20 708.333	15.07
USA	PV Rooftop Block 2 2050	1.469	23 458.333	14.3
CAN	PV Rooftop Block 2 2050	0.637	21 395.833	13.364
ANZ	PV Rooftop Block 2 2050	0.244	19 333.333	13.942
PAC	Wind Onshore A Block 2 2050	0.457	43 333.333	18.988
SWA	Wind Onshore A Block 2 2050	1.861	38 333.333	17.361
SEA	Wind Onshore A Block 2 2050	10.89	38 333.333	19.433

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SEE	Wind Onshore A Block 2 2050	2.752	48 333.333	21.458
IND	Wind Onshore A Block 2 2050	1.562	38 333.333	19.165
CHN	Wind Onshore A Block 2 2050	7.366	38 333.333	17.047
LEV	Wind Onshore A Block 2 2050	0.514	38 333.333	16.796
EAF	Wind Onshore A Block 2 2050	4.484	50 000	21.838
IRN	Wind Onshore A Block 2 2050	3.512	48 333.333	20.123
SWE	Wind Onshore A Block 2 2050	2.757	46 666.667	19.82
JSK	Wind Onshore A Block 2 2050	0	51 666.667	21.714
NAF	Wind Onshore A Block 2 2050	1.443	48 333.333	18.681
CEA	Wind Onshore A Block 2 2050	3.024	46 666.667	20.998
WAF	Wind Onshore A Block 2 2050	5.155	50 000	23.374
EAS	Wind Onshore A Block 2 2050	1.592	41 666.667	19.162
EAE	Wind Onshore A Block 2 2050	1.489	45 000	20.588
RUS	Wind Onshore A Block 2 2050	2.214	50 000	20.91
SAF	Wind Onshore A Block 2 2050	3.68	36 666.667	15.863
GLF	Wind Onshore A Block 2 2050	2.867	38 333.333	15.912
CAS	Wind Onshore A Block 2 2050	1.695	50 000	19.971
CEE	Wind Onshore A Block 2 2050	0	48 333.333	21.937
NOE	Wind Onshore A Block 2 2050	0.78	50 000	21.685
BRI	Wind Onshore A Block 2 2050	0.001	48 333.333	18.518
USA	Wind Onshore A Block 2 2050	14.413	41 666.667	18.133
CAN	Wind Onshore A Block 2 2050	1.509	41 666.667	17.709
ANZ	Wind Onshore A Block 2 2050	1.466	35 000	15.546
PAC	Wind Onshore B Block 2 2050	0.342	47 708.333	20.869
SWA	Wind Onshore B Block 2 2050	3.44	42 083.333	19.403

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SEA	Wind Onshore B Block 2 2050	12.258	42 083.333	19.964
SEE	Wind Onshore B Block 2 2050	0.001	53 333.333	18.543
IND	Wind Onshore B Block 2 2050	0.614	42 083.333	20.291
CHN	Wind Onshore B Block 2 2050	8.349	42 083.333	17.709
LEV	Wind Onshore B Block 2 2050	0.639	42 083.333	18.525
EAF	Wind Onshore B Block 2 2050	16.743	55 208.333	23.639
IRN	Wind Onshore B Block 2 2050	2.837	53 333.333	21.59
SWE	Wind Onshore B Block 2 2050	0.001	51 458.333	21.419
JSK	Wind Onshore B Block 2 2050	0	57 083.333	0
NAF	Wind Onshore B Block 2 2050	0.68	53 333.333	19.124
CEA	Wind Onshore B Block 2 2050	3.34	51 458.333	22.704
WAF	Wind Onshore B Block 2 2050	7.086	55 208.333	23.867
EAS	Wind Onshore B Block 2 2050	0.314	45 833.333	19.98
EAE	Wind Onshore B Block 2 2050	0.007	49 583.333	23.297
RUS	Wind Onshore B Block 2 2050	17.117	55 208.333	23.232
SAF	Wind Onshore B Block 2 2050	6.708	40 208.333	16.956
GLF	Wind Onshore B Block 2 2050	2.18	42 083.333	17.819
CAS	Wind Onshore B Block 2 2050	3.985	55 208.333	21.835
CEE	Wind Onshore B Block 2 2050	0	53 333.333	0
NOE	Wind Onshore B Block 2 2050	1.785	55 208.333	23.882
BRI	Wind Onshore B Block 2 2050	0	53 333.333	19.858
USA	Wind Onshore B Block 2 2050	3.729	45 833.333	19.097
CAN	Wind Onshore B Block 2 2050	10.874	45 833.333	19.697
ANZ	Wind Onshore B Block 2 2050	5.9	38 333.333	16.882
PAC	Wind Offshore Block 2 2050	4.445	63 020.833	20.646

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SWA	Wind Offshore Block 2 2050	0.248	55 208.333	37.453
SEA	Wind Offshore Block 2 2050	7.84	55 208.333	42.88
SEE	Wind Offshore Block 2 2050	0.227	70 833.333	20.071
IND	Wind Offshore Block 2 2050	4.25	55 208.333	24.48
CHN	Wind Offshore Block 2 2050	1.806	55 208.333	16.695
LEV	Wind Offshore Block 2 2050	0.317	55 208.333	20.445
EAF	Wind Offshore Block 2 2050	2.422	73 437.5	28.205
IRN	Wind Offshore Block 2 2050	1.523	70 833.333	38.112
SWE	Wind Offshore Block 2 2050	0.473	68 229.167	20.656
JSK	Wind Offshore Block 2 2050	0	76 041.667	21.103
NAF	Wind Offshore Block 2 2050	0.091	70 833.333	20.393
CEA	Wind Offshore Block 2 2050	9.136	68 229.167	25.611
WAF	Wind Offshore Block 2 2050	0.752	73 437.5	29.734
EAS	Wind Offshore Block 2 2050	2.794	60 416.667	30.983
EAE	Wind Offshore Block 2 2050	0.011	65 625	17.335
RUS	Wind Offshore Block 2 2050	0.857	73 437.5	20.43
SAF	Wind Offshore Block 2 2050	0.015	52 604.167	16.053
GLF	Wind Offshore Block 2 2050	3.072	55 208.333	25.982
CAS	Wind Offshore Block 2 2050	0.437	73 437.5	19.222
CEE	Wind Offshore Block 2 2050	0	70 833.333	22.056
NOE	Wind Offshore Block 2 2050	0.02	73 437.5	22.031
BRI	Wind Offshore Block 2 2050	0	70 833.333	19.544
USA	Wind Offshore Block 2 2050	6.021	60 416.667	32.629
CAN	Wind Offshore Block 2 2050	0.171	60 416.667	16.603
ANZ	Wind Offshore Block 2 2050	1.122	50 000	19.035

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
PAC	PV Plant A Block 3 2050	3.785	20 833.333	11.351
SWA	PV Plant A Block 3 2050	23.961	18 958.333	10.524
SEA	PV Plant A Block 3 2050	76.265	18 958.333	10.65
SEE	PV Plant A Block 3 2050	17.08	20 833.333	11.545
IND	PV Plant A Block 3 2050	0	18 958.333	10.22
CHN	PV Plant A Block 3 2050	37.695	17 708.333	9.811
LEV	PV Plant A Block 3 2050	0	18 958.333	0
EAF	PV Plant A Block 3 2050	25.283	23 958.333	12.238
IRN	PV Plant A Block 3 2050	1.573	23 333.333	11.928
SWE	PV Plant A Block 3 2050	6.396	18 333.333	10.666
JSK	PV Plant A Block 3 2050	0	27 083.333	14.099
NAF	PV Plant A Block 3 2050	0	23 333.333	0
CEA	PV Plant A Block 3 2050	9.417	20 833.333	11.161
WAF	PV Plant A Block 3 2050	16.59	23 958.333	12.447
EAS	PV Plant A Block 3 2050	12.299	20 833.333	10.89
EAE	PV Plant A Block 3 2050	7.871	20 833.333	12.305
RUS	PV Plant A Block 3 2050	25.767	24 583.333	13.413
SAF	PV Plant A Block 3 2050	24.561	18 958.333	11.085
GLF	PV Plant A Block 3 2050	0	18 333.333	0
CAS	PV Plant A Block 3 2050	6.131	23 333.333	12.392
CEE	PV Plant A Block 3 2050	0	20 833.333	12.012
NOE	PV Plant A Block 3 2050	0	20 833.333	0
BRI	PV Plant A Block 3 2050	0	19 583.333	0
USA	PV Plant A Block 3 2050	113.184	22 083.333	11.723
CAN	PV Plant A Block 3 2050	28.819	20 208.333	11.187

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
ANZ	PV Plant A Block 3 2050	1.575	18 333.333	10.717
PAC	PV Plant B Block 3 2050	2.817	22 083.333	12.396
SWA	PV Plant B Block 3 2050	22.81	20 020.833	11.125
SEA	PV Plant B Block 3 2050	126.863	20 020.833	11.102
SEE	PV Plant B Block 3 2050	0	22 083.333	0
IND	PV Plant B Block 3 2050	0.739	20 020.833	11.462
CHN	PV Plant B Block 3 2050	13.424	18 645.833	10.006
LEV	PV Plant B Block 3 2050	0	20 020.833	0
EAF	PV Plant B Block 3 2050	89.062	25 520.833	12.916
IRN	PV Plant B Block 3 2050	0	24 833.333	0
SWE	PV Plant B Block 3 2050	0	19 333.333	10.251
JSK	PV Plant B Block 3 2050	0	28 958.333	0
NAF	PV Plant B Block 3 2050	0	24 833.333	0
CEA	PV Plant B Block 3 2050	1.699	22 083.333	11.874
WAF	PV Plant B Block 3 2050	15.94	25 520.833	12.408
EAS	PV Plant B Block 3 2050	0.944	22 083.333	11.938
EAE	PV Plant B Block 3 2050	0.299	22 083.333	12.709
RUS	PV Plant B Block 3 2050	59.077	26 208.333	13.944
SAF	PV Plant B Block 3 2050	69.401	20 020.833	10.983
GLF	PV Plant B Block 3 2050	0	19 333.333	0
CAS	PV Plant B Block 3 2050	69.611	24 833.333	13.078
CEE	PV Plant B Block 3 2050	0	22 083.333	0
NOE	PV Plant B Block 3 2050	0	22 083.333	0
BRI	PV Plant B Block 3 2050	0	20 708.333	0
USA	PV Plant B Block 3 2050	4.669	23 458.333	11.509

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CAN	PV Plant B Block 3 2050	20.237	21 395.833	11.83
ANZ	PV Plant B Block 3 2050	26.297	19 333.333	10.968
PAC	PV Rooftop Block 3 2050	13.873	22 083.333	11.561
SWA	PV Rooftop Block 3 2050	1.868	20 020.833	11.046
SEA	PV Rooftop Block 3 2050	2.241	20 020.833	10.941
SEE	PV Rooftop Block 3 2050	2.391	22 083.333	11.999
IND	PV Rooftop Block 3 2050	12.228	20 020.833	10.653
CHN	PV Rooftop Block 3 2050	47.684	18 645.833	10.411
LEV	PV Rooftop Block 3 2050	0	20 020.833	0
EAF	PV Rooftop Block 3 2050	7.946	25 520.833	12.691
IRN	PV Rooftop Block 3 2050	0.464	24 833.333	12.819
SWE	PV Rooftop Block 3 2050	4.748	19 333.333	11.031
JSK	PV Rooftop Block 3 2050	0	28 958.333	15.043
NAF	PV Rooftop Block 3 2050	0	24 833.333	0
CEA	PV Rooftop Block 3 2050	1.25	22 083.333	11.545
WAF	PV Rooftop Block 3 2050	8.92	25 520.833	13.231
EAS	PV Rooftop Block 3 2050	16.954	22 083.333	11.381
EAE	PV Rooftop Block 3 2050	0.676	22 083.333	12.795
RUS	PV Rooftop Block 3 2050	1.123	26 208.333	14.012
SAF	PV Rooftop Block 3 2050	0.717	20 020.833	11.981
GLF	PV Rooftop Block 3 2050	0	19 333.333	0
CAS	PV Rooftop Block 3 2050	0.748	24 833.333	12.376
CEE	PV Rooftop Block 3 2050	0	22 083.333	12.925
NOE	PV Rooftop Block 3 2050	0	22 083.333	0
BRI	PV Rooftop Block 3 2050	0	20 708.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
USA	PV Rooftop Block 3 2050	9.199	23 458.333	12.676
CAN	PV Rooftop Block 3 2050	0.788	21 395.833	12.198
ANZ	PV Rooftop Block 3 2050	0.046	19 333.333	11.402
PAC	Wind Onshore A Block 3 2050	0.159	43 333.333	13.585
SWA	Wind Onshore A Block 3 2050	1.136	38 333.333	12.89
SEA	Wind Onshore A Block 3 2050	10.468	38 333.333	12.722
SEE	Wind Onshore A Block 3 2050	1.404	48 333.333	15.588
IND	Wind Onshore A Block 3 2050	0.443	38 333.333	13.264
CHN	Wind Onshore A Block 3 2050	6.601	38 333.333	12.127
LEV	Wind Onshore A Block 3 2050	0.967	38 333.333	12.377
EAF	Wind Onshore A Block 3 2050	3.343	50 000	15.404
IRN	Wind Onshore A Block 3 2050	3.637	48 333.333	14.816
SWE	Wind Onshore A Block 3 2050	2.585	46 666.667	14.941
JSK	Wind Onshore A Block 3 2050	0	51 666.667	15.993
NAF	Wind Onshore A Block 3 2050	1.977	48 333.333	13.995
CEA	Wind Onshore A Block 3 2050	1.574	46 666.667	14.84
WAF	Wind Onshore A Block 3 2050	3.687	50 000	16.937
EAS	Wind Onshore A Block 3 2050	0.559	41 666.667	12.844
EAE	Wind Onshore A Block 3 2050	4.301	45 000	15.016
RUS	Wind Onshore A Block 3 2050	9.364	50 000	15.798
SAF	Wind Onshore A Block 3 2050	0.851	36 666.667	11.746
GLF	Wind Onshore A Block 3 2050	7.882	38 333.333	12.146
CAS	Wind Onshore A Block 3 2050	1.915	50 000	14.96
CEE	Wind Onshore A Block 3 2050	0	48 333.333	16.314
NOE	Wind Onshore A Block 3 2050	2.627	50 000	16.531

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
BRI	Wind Onshore A Block 3 2050	0.039	48 333.333	14.213
USA	Wind Onshore A Block 3 2050	14.743	41 666.667	13.324
CAN	Wind Onshore A Block 3 2050	4.736	41 666.667	13.104
ANZ	Wind Onshore A Block 3 2050	2.154	35 000	11.193
PAC	Wind Onshore B Block 3 2050	0.1	47 708.333	15.385
SWA	Wind Onshore B Block 3 2050	1.698	42 083.333	13.958
SEA	Wind Onshore B Block 3 2050	9.496	42 083.333	13.651
SEE	Wind Onshore B Block 3 2050	0.001	53 333.333	14.835
IND	Wind Onshore B Block 3 2050	0.335	42 083.333	13.978
CHN	Wind Onshore B Block 3 2050	7.156	42 083.333	12.887
LEV	Wind Onshore B Block 3 2050	1.452	42 083.333	13.576
EAF	Wind Onshore B Block 3 2050	11.66	55 208.333	16.923
IRN	Wind Onshore B Block 3 2050	3.464	53 333.333	16.083
SWE	Wind Onshore B Block 3 2050	0.002	51 458.333	16.35
JSK	Wind Onshore B Block 3 2050	0	57 083.333	0
NAF	Wind Onshore B Block 3 2050	2.622	53 333.333	14.854
CEA	Wind Onshore B Block 3 2050	1.488	51 458.333	16.408
WAF	Wind Onshore B Block 3 2050	7.676	55 208.333	17.447
EAS	Wind Onshore B Block 3 2050	0.174	45 833.333	13.943
EAE	Wind Onshore B Block 3 2050	0.26	49 583.333	16.533
RUS	Wind Onshore B Block 3 2050	24.426	55 208.333	17.538
SAF	Wind Onshore B Block 3 2050	7.475	40 208.333	12.899
GLF	Wind Onshore B Block 3 2050	7.385	42 083.333	13.126
CAS	Wind Onshore B Block 3 2050	7.876	55 208.333	15.872
CEE	Wind Onshore B Block 3 2050	0	53 333.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
NOE	Wind Onshore B Block 3 2050	2.704	55 208.333	18.051
BRI	Wind Onshore B Block 3 2050	0.009	53 333.333	14.948
USA	Wind Onshore B Block 3 2050	2.963	45 833.333	14.377
CAN	Wind Onshore B Block 3 2050	17.095	45 833.333	14.54
ANZ	Wind Onshore B Block 3 2050	9.973	38 333.333	11.771
PAC	Wind Offshore Block 3 2050	3.342	63 020.833	29.63
SWA	Wind Offshore Block 3 2050	0.407	55 208.333	18.046
SEA	Wind Offshore Block 3 2050	2.245	55 208.333	16.339
SEE	Wind Offshore Block 3 2050	0.121	70 833.333	17.593
IND	Wind Offshore Block 3 2050	1.807	55 208.333	18.269
CHN	Wind Offshore Block 3 2050	13.991	55 208.333	24.346
LEV	Wind Offshore Block 3 2050	0.013	55 208.333	14.775
EAF	Wind Offshore Block 3 2050	0.565	73 437.5	16.718
IRN	Wind Offshore Block 3 2050	0.417	70 833.333	32.364
SWE	Wind Offshore Block 3 2050	0.827	68 229.167	17.356
JSK	Wind Offshore Block 3 2050	0	76 041.667	17.667
NAF	Wind Offshore Block 3 2050	1.593	70 833.333	19.477
CEA	Wind Offshore Block 3 2050	7.968	68 229.167	30.835
WAF	Wind Offshore Block 3 2050	0.199	73 437.5	16.576
EAS	Wind Offshore Block 3 2050	2.789	60 416.667	34.379
EAE	Wind Offshore Block 3 2050	1.564	65 625	17.957
RUS	Wind Offshore Block 3 2050	1.316	73 437.5	19.701
SAF	Wind Offshore Block 3 2050	0.074	52 604.167	12.062
GLF	Wind Offshore Block 3 2050	0.783	55 208.333	14.816
CAS	Wind Offshore Block 3 2050	1.291	73 437.5	16.404

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CEE	Wind Offshore Block 3 2050	0	70 833.333	0
NOE	Wind Offshore Block 3 2050	0.165	73 437.5	16.714
BRI	Wind Offshore Block 3 2050	0.172	70 833.333	16.416
USA	Wind Offshore Block 3 2050	8.14	60 416.667	25.298
CAN	Wind Offshore Block 3 2050	2.022	60 416.667	14.194
ANZ	Wind Offshore Block 3 2050	6.033	50 000	13.154
PAC	PV Plant A Block 4 2050	0	20 833.333	9.992
SWA	PV Plant A Block 4 2050	22.118	18 958.333	9.209
SEA	PV Plant A Block 4 2050	13.707	18 958.333	9.238
SEE	PV Plant A Block 4 2050	17.815	20 833.333	9.742
IND	PV Plant A Block 4 2050	0	18 958.333	8.904
CHN	PV Plant A Block 4 2050	0	17 708.333	8.644
LEV	PV Plant A Block 4 2050	5.779	18 958.333	8.513
EAF	PV Plant A Block 4 2050	39.086	23 958.333	10.455
IRN	PV Plant A Block 4 2050	32.205	23 333.333	9.983
SWE	PV Plant A Block 4 2050	0	18 333.333	9.072
JSK	PV Plant A Block 4 2050	0	27 083.333	0
NAF	PV Plant A Block 4 2050	20.825	23 333.333	10.048
CEA	PV Plant A Block 4 2050	20.691	20 833.333	9.541
WAF	PV Plant A Block 4 2050	49.893	23 958.333	10.429
EAS	PV Plant A Block 4 2050	0	20 833.333	9.969
EAE	PV Plant A Block 4 2050	0	20 833.333	0
RUS	PV Plant A Block 4 2050	1.226	24 583.333	11.197
SAF	PV Plant A Block 4 2050	0	18 958.333	9.334
GLF	PV Plant A Block 4 2050	2.617	18 333.333	8.189

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CAS	PV Plant A Block 4 2050	40.181	23 333.333	10.431
CEE	PV Plant A Block 4 2050	0	20 833.333	0
NOE	PV Plant A Block 4 2050	0	20 833.333	0
BRI	PV Plant A Block 4 2050	0	19 583.333	8.645
USA	PV Plant A Block 4 2050	71.617	22 083.333	9.985
CAN	PV Plant A Block 4 2050	0.364	20 208.333	10.101
ANZ	PV Plant A Block 4 2050	0	18 333.333	9.334
PAC	PV Plant B Block 4 2050	0	22 083.333	10.187
SWA	PV Plant B Block 4 2050	27.909	20 020.833	9.395
SEA	PV Plant B Block 4 2050	33.18	20 020.833	9.739
SEE	PV Plant B Block 4 2050	0.023	22 083.333	10.158
IND	PV Plant B Block 4 2050	0	20 020.833	8.859
CHN	PV Plant B Block 4 2050	107.646	18 645.833	8.673
LEV	PV Plant B Block 4 2050	0.239	20 020.833	8.572
EAF	PV Plant B Block 4 2050	120.687	25 520.833	10.92
IRN	PV Plant B Block 4 2050	3.569	24 833.333	10.128
SWE	PV Plant B Block 4 2050	0	19 333.333	9.832
JSK	PV Plant B Block 4 2050	0	28 958.333	0
NAF	PV Plant B Block 4 2050	3.956	24 833.333	10.091
CEA	PV Plant B Block 4 2050	6.807	22 083.333	9.874
WAF	PV Plant B Block 4 2050	57.319	25 520.833	10.964
EAS	PV Plant B Block 4 2050	0	22 083.333	9.826
EAE	PV Plant B Block 4 2050	0	22 083.333	0
RUS	PV Plant B Block 4 2050	0.441	26 208.333	11.697
SAF	PV Plant B Block 4 2050	2.052	20 020.833	9.855

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
GLF	PV Plant B Block 4 2050	0.149	19 333.333	8.477
CAS	PV Plant B Block 4 2050	72.363	24 833.333	11.195
CEE	PV Plant B Block 4 2050	0	22 083.333	0
NOE	PV Plant B Block 4 2050	0	22 083.333	0
BRI	PV Plant B Block 4 2050	0	20 708.333	0
USA	PV Plant B Block 4 2050	28.368	23 458.333	10.434
CAN	PV Plant B Block 4 2050	1.579	21 395.833	10.483
ANZ	PV Plant B Block 4 2050	6.753	19 333.333	9.692
PAC	PV Rooftop Block 4 2050	0	22 083.333	10.414
SWA	PV Rooftop Block 4 2050	0.968	20 020.833	9.607
SEA	PV Rooftop Block 4 2050	1.175	20 020.833	9.611
SEE	PV Rooftop Block 4 2050	1.582	22 083.333	10.29
IND	PV Rooftop Block 4 2050	88.078	20 020.833	9.422
CHN	PV Rooftop Block 4 2050	3.445	18 645.833	9.245
LEV	PV Rooftop Block 4 2050	4.431	20 020.833	9.068
EAF	PV Rooftop Block 4 2050	13.67	25 520.833	11.14
IRN	PV Rooftop Block 4 2050	9.663	24 833.333	10.377
SWE	PV Rooftop Block 4 2050	0	19 333.333	9.366
JSK	PV Rooftop Block 4 2050	0	28 958.333	0
NAF	PV Rooftop Block 4 2050	4.016	24 833.333	11.01
CEA	PV Rooftop Block 4 2050	6.469	22 083.333	9.821
WAF	PV Rooftop Block 4 2050	3.739	25 520.833	10.922
EAS	PV Rooftop Block 4 2050	3.15	22 083.333	10.585
EAE	PV Rooftop Block 4 2050	0	22 083.333	0
RUS	PV Rooftop Block 4 2050	0.061	26 208.333	11.577

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SAF	PV Rooftop Block 4 2050	0	20 020.833	9.457
GLF	PV Rooftop Block 4 2050	1.587	19 333.333	8.661
CAS	PV Rooftop Block 4 2050	2.94	24 833.333	10.943
CEE	PV Rooftop Block 4 2050	0	22 083.333	0
NOE	PV Rooftop Block 4 2050	0	22 083.333	0
BRI	PV Rooftop Block 4 2050	0	20 708.333	9.384
USA	PV Rooftop Block 4 2050	1.547	23 458.333	10.232
CAN	PV Rooftop Block 4 2050	0	21 395.833	10.54
ANZ	PV Rooftop Block 4 2050	0.005	19 333.333	9.712
PAC	Wind Onshore A Block 4 2050	0.055	43 333.333	10.576
SWA	Wind Onshore A Block 4 2050	0.525	38 333.333	10.008
SEA	Wind Onshore A Block 4 2050	5.453	38 333.333	9.868
SEE	Wind Onshore A Block 4 2050	0.44	48 333.333	12.241
IND	Wind Onshore A Block 4 2050	0.102	38 333.333	10.316
CHN	Wind Onshore A Block 4 2050	3.887	38 333.333	9.524
LEV	Wind Onshore A Block 4 2050	0.743	38 333.333	9.835
EAF	Wind Onshore A Block 4 2050	1.243	50 000	11.643
IRN	Wind Onshore A Block 4 2050	2.499	48 333.333	11.965
SWE	Wind Onshore A Block 4 2050	1.593	46 666.667	12.151
JSK	Wind Onshore A Block 4 2050	0	51 666.667	12.679
NAF	Wind Onshore A Block 4 2050	2.43	48 333.333	11.211
CEA	Wind Onshore A Block 4 2050	0.548	46 666.667	11.109
WAF	Wind Onshore A Block 4 2050	0.79	50 000	12.149
EAS	Wind Onshore A Block 4 2050	0.13	41 666.667	9.681
EAE	Wind Onshore A Block 4 2050	0	45 000	12.503

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
RUS	Wind Onshore A Block 4 2050	1.11	50 000	12.46
SAF	Wind Onshore A Block 4 2050	0	36 666.667	9.379
GLF	Wind Onshore A Block 4 2050	4.321	38 333.333	9.734
CAS	Wind Onshore A Block 4 2050	2.568	50 000	11.686
CEE	Wind Onshore A Block 4 2050	0	48 333.333	12.549
NOE	Wind Onshore A Block 4 2050	0.89	50 000	12.989
BRI	Wind Onshore A Block 4 2050	0.142	48 333.333	11.634
USA	Wind Onshore A Block 4 2050	15.397	41 666.667	10.395
CAN	Wind Onshore A Block 4 2050	4.251	41 666.667	10.386
ANZ	Wind Onshore A Block 4 2050	1.438	35 000	9.089
PAC	Wind Onshore B Block 4 2050	0.044	47 708.333	12.082
SWA	Wind Onshore B Block 4 2050	0.969	42 083.333	11.085
SEA	Wind Onshore B Block 4 2050	6.047	42 083.333	10.474
SEE	Wind Onshore B Block 4 2050	0	53 333.333	12.324
IND	Wind Onshore B Block 4 2050	0.184	42 083.333	10.76
CHN	Wind Onshore B Block 4 2050	8.248	42 083.333	10.107
LEV	Wind Onshore B Block 4 2050	2.275	42 083.333	10.618
EAF	Wind Onshore B Block 4 2050	5.69	55 208.333	12.583
IRN	Wind Onshore B Block 4 2050	3.525	53 333.333	12.803
SWE	Wind Onshore B Block 4 2050	0.003	51 458.333	12.85
JSK	Wind Onshore B Block 4 2050	0	57 083.333	0
NAF	Wind Onshore B Block 4 2050	9.975	53 333.333	11.913
CEA	Wind Onshore B Block 4 2050	0.398	51 458.333	12.542
WAF	Wind Onshore B Block 4 2050	6.236	55 208.333	13.39
EAS	Wind Onshore B Block 4 2050	0.078	45 833.333	10.939

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAE	Wind Onshore B Block 4 2050	0	49 583.333	13.252
RUS	Wind Onshore B Block 4 2050	12.114	55 208.333	13.015
SAF	Wind Onshore B Block 4 2050	0	40 208.333	10.206
GLF	Wind Onshore B Block 4 2050	2.841	42 083.333	10.423
CAS	Wind Onshore B Block 4 2050	17.123	55 208.333	12.843
CEE	Wind Onshore B Block 4 2050	0	53 333.333	0
NOE	Wind Onshore B Block 4 2050	0.967	55 208.333	13.479
BRI	Wind Onshore B Block 4 2050	0	53 333.333	12.311
USA	Wind Onshore B Block 4 2050	2.922	45 833.333	11.274
CAN	Wind Onshore B Block 4 2050	7.349	45 833.333	11.173
ANZ	Wind Onshore B Block 4 2050	7.919	38 333.333	9.636
PAC	Wind Offshore Block 4 2050	0.592	63 020.833	13.455
SWA	Wind Offshore Block 4 2050	0.367	55 208.333	11.566
SEA	Wind Offshore Block 4 2050	8.12	55 208.333	20.873
SEE	Wind Offshore Block 4 2050	0.047	70 833.333	13.733
IND	Wind Offshore Block 4 2050	0.224	55 208.333	11.319
CHN	Wind Offshore Block 4 2050	3.74	55 208.333	17.933
LEV	Wind Offshore Block 4 2050	0.008	55 208.333	11.199
EAF	Wind Offshore Block 4 2050	0.216	73 437.5	13.767
IRN	Wind Offshore Block 4 2050	0	70 833.333	0
SWE	Wind Offshore Block 4 2050	0.904	68 229.167	17.031
JSK	Wind Offshore Block 4 2050	0	76 041.667	15.216
NAF	Wind Offshore Block 4 2050	0.126	70 833.333	14.869
CEA	Wind Offshore Block 4 2050	1.25	68 229.167	24.469
WAF	Wind Offshore Block 4 2050	0.066	73 437.5	12.39

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
EAS	Wind Offshore Block 4 2050	0.492	60 416.667	45.894
EAE	Wind Offshore Block 4 2050	1.376	65 625	16.874
RUS	Wind Offshore Block 4 2050	6.082	73 437.5	14.393
SAF	Wind Offshore Block 4 2050	0.05	52 604.167	11.653
GLF	Wind Offshore Block 4 2050	0.316	55 208.333	15.974
CAS	Wind Offshore Block 4 2050	0.563	73 437.5	13.737
CEE	Wind Offshore Block 4 2050	0	70 833.333	13.256
NOE	Wind Offshore Block 4 2050	2.015	73 437.5	14.774
BRI	Wind Offshore Block 4 2050	0.125	70 833.333	13.28
USA	Wind Offshore Block 4 2050	8.019	60 416.667	13.863
CAN	Wind Offshore Block 4 2050	6.141	60 416.667	11.867
ANZ	Wind Offshore Block 4 2050	5.931	50 000	11.871
PAC	PV Plant A Block 5 2050	0	20 833.333	0
SWA	PV Plant A Block 5 2050	0	18 958.333	8.049
SEA	PV Plant A Block 5 2050	0	18 958.333	8.052
SEE	PV Plant A Block 5 2050	0	20 833.333	0
IND	PV Plant A Block 5 2050	0	18 958.333	7.953
CHN	PV Plant A Block 5 2050	0	17 708.333	7.501
LEV	PV Plant A Block 5 2050	0	18 958.333	7.769
EAF	PV Plant A Block 5 2050	19.715	23 958.333	9.213
IRN	PV Plant A Block 5 2050	37.951	23 333.333	8.998
SWE	PV Plant A Block 5 2050	0	18 333.333	7.956
JSK	PV Plant A Block 5 2050	0	27 083.333	0
NAF	PV Plant A Block 5 2050	15.821	23 333.333	9.127
CEA	PV Plant A Block 5 2050	8.408	20 833.333	8.373

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
WAF	PV Plant A Block 5 2050	27.197	23 958.333	9.311
EAS	PV Plant A Block 5 2050	0	20 833.333	8.501
EAE	PV Plant A Block 5 2050	0	20 833.333	0
RUS	PV Plant A Block 5 2050	0	24 583.333	0
SAF	PV Plant A Block 5 2050	0	18 958.333	0
GLF	PV Plant A Block 5 2050	72.772	18 333.333	7.502
CAS	PV Plant A Block 5 2050	4.438	23 333.333	8.811
CEE	PV Plant A Block 5 2050	0	20 833.333	0
NOE	PV Plant A Block 5 2050	0	20 833.333	0
BRI	PV Plant A Block 5 2050	0	19 583.333	0
USA	PV Plant A Block 5 2050	6.865	22 083.333	8.725
CAN	PV Plant A Block 5 2050	0	20 208.333	0
ANZ	PV Plant A Block 5 2050	0	18 333.333	0
PAC	PV Plant B Block 5 2050	0	22 083.333	0
SWA	PV Plant B Block 5 2050	0	20 020.833	8.322
SEA	PV Plant B Block 5 2050	0	20 020.833	0
SEE	PV Plant B Block 5 2050	0	22 083.333	0
IND	PV Plant B Block 5 2050	0	20 020.833	7.772
CHN	PV Plant B Block 5 2050	0	18 645.833	7.586
LEV	PV Plant B Block 5 2050	32.1	20 020.833	7.832
EAF	PV Plant B Block 5 2050	81.704	25 520.833	9.625
IRN	PV Plant B Block 5 2050	67.98	24 833.333	9.338
SWE	PV Plant B Block 5 2050	0	19 333.333	0
JSK	PV Plant B Block 5 2050	0	28 958.333	0
NAF	PV Plant B Block 5 2050	92.371	24 833.333	9.445

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
CEA	PV Plant B Block 5 2050	36.076	22 083.333	8.711
WAF	PV Plant B Block 5 2050	105.68	25 520.833	9.546
EAS	PV Plant B Block 5 2050	0	22 083.333	8.553
EAE	PV Plant B Block 5 2050	0	22 083.333	0
RUS	PV Plant B Block 5 2050	0	26 208.333	0
SAF	PV Plant B Block 5 2050	0	20 020.833	0
GLF	PV Plant B Block 5 2050	74.194	19 333.333	7.72
CAS	PV Plant B Block 5 2050	41.471	24 833.333	9.176
CEE	PV Plant B Block 5 2050	0	22 083.333	0
NOE	PV Plant B Block 5 2050	0	22 083.333	0
BRI	PV Plant B Block 5 2050	0	20 708.333	0
USA	PV Plant B Block 5 2050	27.455	23 458.333	9.138
CAN	PV Plant B Block 5 2050	0	21 395.833	0
ANZ	PV Plant B Block 5 2050	0	19 333.333	0
PAC	PV Rooftop Block 5 2050	0	22 083.333	0
SWA	PV Rooftop Block 5 2050	0	20 020.833	0
SEA	PV Rooftop Block 5 2050	0	20 020.833	8.395
SEE	PV Rooftop Block 5 2050	0	22 083.333	0
IND	PV Rooftop Block 5 2050	0	20 020.833	8.433
CHN	PV Rooftop Block 5 2050	0	18 645.833	8.017
LEV	PV Rooftop Block 5 2050	1.402	20 020.833	8.043
EAF	PV Rooftop Block 5 2050	1.471	25 520.833	9.611
IRN	PV Rooftop Block 5 2050	7.422	24 833.333	9.686
SWE	PV Rooftop Block 5 2050	0	19 333.333	8.266
JSK	PV Rooftop Block 5 2050	0	28 958.333	0

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
NAF	PV Rooftop Block 5 2050	0.115	24 833.333	9.845
CEA	PV Rooftop Block 5 2050	1.053	22 083.333	8.881
WAF	PV Rooftop Block 5 2050	6.838	25 520.833	9.826
EAS	PV Rooftop Block 5 2050	0	22 083.333	0
EAE	PV Rooftop Block 5 2050	0	22 083.333	0
RUS	PV Rooftop Block 5 2050	0	26 208.333	0
SAF	PV Rooftop Block 5 2050	0	20 020.833	0
GLF	PV Rooftop Block 5 2050	1.478	19 333.333	8.012
CAS	PV Rooftop Block 5 2050	0.71	24 833.333	9.359
CEE	PV Rooftop Block 5 2050	0	22 083.333	0
NOE	PV Rooftop Block 5 2050	0	22 083.333	0
BRI	PV Rooftop Block 5 2050	0	20 708.333	0
USA	PV Rooftop Block 5 2050	1.293	23 458.333	9.189
CAN	PV Rooftop Block 5 2050	0	21 395.833	0
ANZ	PV Rooftop Block 5 2050	0	19 333.333	0
PAC	Wind Onshore A Block 5 2050	0.031	43 333.333	8.239
SWA	Wind Onshore A Block 5 2050	0	38 333.333	7.109
SEA	Wind Onshore A Block 5 2050	0.91	38 333.333	7.44
SEE	Wind Onshore A Block 5 2050	0.142	48 333.333	10.005
IND	Wind Onshore A Block 5 2050	0.037	38 333.333	7.85
CHN	Wind Onshore A Block 5 2050	1.925	38 333.333	7.611
LEV	Wind Onshore A Block 5 2050	0.328	38 333.333	7.746
EAF	Wind Onshore A Block 5 2050	0.661	50 000	8.874
IRN	Wind Onshore A Block 5 2050	0.636	48 333.333	9.647
SWE	Wind Onshore A Block 5 2050	0	46 666.667	9.919

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
JSK	Wind Onshore A Block 5 2050	0	51 666.667	10.396
NAF	Wind Onshore A Block 5 2050	0.576	48 333.333	9.573
CEA	Wind Onshore A Block 5 2050	0.195	46 666.667	8.382
WAF	Wind Onshore A Block 5 2050	0.168	50 000	9.075
EAS	Wind Onshore A Block 5 2050	0	41 666.667	7.769
EAE	Wind Onshore A Block 5 2050	0	45 000	10.619
RUS	Wind Onshore A Block 5 2050	0	50 000	10.216
SAF	Wind Onshore A Block 5 2050	0	36 666.667	7.575
GLF	Wind Onshore A Block 5 2050	0.689	38 333.333	7.899
CAS	Wind Onshore A Block 5 2050	0.788	50 000	9.698
CEE	Wind Onshore A Block 5 2050	0	48 333.333	10.233
NOE	Wind Onshore A Block 5 2050	0	50 000	9.978
BRI	Wind Onshore A Block 5 2050	0	48 333.333	9.449
USA	Wind Onshore A Block 5 2050	1.966	41 666.667	8.712
CAN	Wind Onshore A Block 5 2050	0	41 666.667	8.389
ANZ	Wind Onshore A Block 5 2050	0	35 000	7.551
PAC	Wind Onshore B Block 5 2050	0.01	47 708.333	9.487
SWA	Wind Onshore B Block 5 2050	1.281	42 083.333	7.609
SEA	Wind Onshore B Block 5 2050	7.183	42 083.333	7.829
SEE	Wind Onshore B Block 5 2050	0	53 333.333	10.615
IND	Wind Onshore B Block 5 2050	0.191	42 083.333	8.112
CHN	Wind Onshore B Block 5 2050	6.568	42 083.333	8.259
LEV	Wind Onshore B Block 5 2050	1.436	42 083.333	8.344
EAF	Wind Onshore B Block 5 2050	4.093	55 208.333	9.448
IRN	Wind Onshore B Block 5 2050	0.995	53 333.333	10.39

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
SWE	Wind Onshore B Block 5 2050	0	51 458.333	9.485
JSK	Wind Onshore B Block 5 2050	0	57 083.333	10.037
NAF	Wind Onshore B Block 5 2050	3.857	53 333.333	10.276
CEA	Wind Onshore B Block 5 2050	0.079	51 458.333	10.041
WAF	Wind Onshore B Block 5 2050	3.126	55 208.333	9.864
EAS	Wind Onshore B Block 5 2050	0	45 833.333	8.218
EAE	Wind Onshore B Block 5 2050	0	49 583.333	11.02
RUS	Wind Onshore B Block 5 2050	0	55 208.333	10.965
SAF	Wind Onshore B Block 5 2050	0	40 208.333	8.361
GLF	Wind Onshore B Block 5 2050	0.259	42 083.333	8.274
CAS	Wind Onshore B Block 5 2050	5.053	55 208.333	10.459
CEE	Wind Onshore B Block 5 2050	0	53 333.333	0
NOE	Wind Onshore B Block 5 2050	0.897	55 208.333	10.536
BRI	Wind Onshore B Block 5 2050	0	53 333.333	9.429
USA	Wind Onshore B Block 5 2050	2.754	45 833.333	9.202
CAN	Wind Onshore B Block 5 2050	0	45 833.333	8.949
ANZ	Wind Onshore B Block 5 2050	0.04	38 333.333	7.746
PAC	Wind Offshore Block 5 2050	0.011	63 020.833	9.325
SWA	Wind Offshore Block 5 2050	0.704	55 208.333	8.161
SEA	Wind Offshore Block 5 2050	5.392	55 208.333	12.324
SEE	Wind Offshore Block 5 2050	0.005	70 833.333	11.989
IND	Wind Offshore Block 5 2050	0.151	55 208.333	14.187
CHN	Wind Offshore Block 5 2050	1.423	55 208.333	20.76
LEV	Wind Offshore Block 5 2050	0.077	55 208.333	8.734
EAF	Wind Offshore Block 5 2050	0.379	73 437.5	14.409

Continued on next page...

Table 26: Renewable Hydrogen Capacity and Cost Assumptions (continued)

Region	Block	Capacity	Investment	Operational
IRN	Wind Offshore Block 5 2050	0	70 833.333	0
SWE	Wind Offshore Block 5 2050	0.472	68 229.167	20.526
JSK	Wind Offshore Block 5 2050	0	76 041.667	12.756
NAF	Wind Offshore Block 5 2050	0.023	70 833.333	11.785
CEA	Wind Offshore Block 5 2050	0.11	68 229.167	11.269
WAF	Wind Offshore Block 5 2050	0.311	73 437.5	10.803
EAS	Wind Offshore Block 5 2050	0.44	60 416.667	16.059
EAE	Wind Offshore Block 5 2050	1.239	65 625	14.441
RUS	Wind Offshore Block 5 2050	0.798	73 437.5	18.785
SAF	Wind Offshore Block 5 2050	0.039	52 604.167	9.234
GLF	Wind Offshore Block 5 2050	0.113	55 208.333	8.508
CAS	Wind Offshore Block 5 2050	0.007	73 437.5	14.333
CEE	Wind Offshore Block 5 2050	1.003	70 833.333	29.33
NOE	Wind Offshore Block 5 2050	4.474	73 437.5	16.75
BRI	Wind Offshore Block 5 2050	4.155	70 833.333	17.639
USA	Wind Offshore Block 5 2050	5.056	60 416.667	13.434
CAN	Wind Offshore Block 5 2050	4.487	60 416.667	10.762
ANZ	Wind Offshore Block 5 2050	2.54	50 000	9.663

Source: Own depiction. Note: Units are TWh/d, M€/TWh/d and M€/TWh, respectively.

3.2 Availability Factors

Table 27 shows renewable availabilities, scaled by electrolyzer efficiency.

Table 27: Renewable Hydrogen Availability Assumptions

Region	Season	Block	Availability
SWA	L	PV Plant A Block 1	0.041
SEA	L	PV Plant A Block 1	0.033

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CHN	L	PV Plant A Block 1	0.119
EAE	L	PV Plant A Block 1	0.152
RUS	L	PV Plant A Block 1	0.142
SAF	L	PV Plant A Block 1	0.046
NOE	L	PV Plant A Block 1	0.13
BRI	L	PV Plant A Block 1	0.126
USA	L	PV Plant A Block 1	0.129
CAN	L	PV Plant A Block 1	0.145
ANZ	L	PV Plant A Block 1	0.032
SWA	H	PV Plant A Block 1	0.134
SEA	H	PV Plant A Block 1	0.15
CHN	H	PV Plant A Block 1	0.071
EAE	H	PV Plant A Block 1	0.042
RUS	H	PV Plant A Block 1	0.04
SAF	H	PV Plant A Block 1	0.145
NOE	H	PV Plant A Block 1	0.04
BRI	H	PV Plant A Block 1	0.058
USA	H	PV Plant A Block 1	0.05
CAN	H	PV Plant A Block 1	0.04
ANZ	H	PV Plant A Block 1	0.136
PAC	L	PV Plant B Block 1	0.074
SWA	L	PV Plant B Block 1	0.024
SEA	L	PV Plant B Block 1	0.026
RUS	L	PV Plant B Block 1	0.14
SAF	L	PV Plant B Block 1	0.042

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NOE	L	PV Plant B Block 1	0.124
BRI	L	PV Plant B Block 1	0.122
USA	L	PV Plant B Block 1	0.125
CAN	L	PV Plant B Block 1	0.142
ANZ	L	PV Plant B Block 1	0.031
PAC	H	PV Plant B Block 1	0.119
SWA	H	PV Plant B Block 1	0.121
SEA	H	PV Plant B Block 1	0.144
RUS	H	PV Plant B Block 1	0.037
SAF	H	PV Plant B Block 1	0.153
NOE	H	PV Plant B Block 1	0.034
BRI	H	PV Plant B Block 1	0.051
USA	H	PV Plant B Block 1	0.04
CAN	H	PV Plant B Block 1	0.042
ANZ	H	PV Plant B Block 1	0.132
SWA	L	PV Rooftop Block 1	0.041
SEA	L	PV Rooftop Block 1	0.046
CHN	L	PV Rooftop Block 1	0.12
EAE	L	PV Rooftop Block 1	0.152
RUS	L	PV Rooftop Block 1	0.143
SAF	L	PV Rooftop Block 1	0.049
NOE	L	PV Rooftop Block 1	0.142
BRI	L	PV Rooftop Block 1	0.131
USA	L	PV Rooftop Block 1	0.138
ANZ	L	PV Rooftop Block 1	0.034

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
SWA	H	PV Rooftop Block 1	0.136
SEA	H	PV Rooftop Block 1	0.142
CHN	H	PV Rooftop Block 1	0.07
EAE	H	PV Rooftop Block 1	0.042
RUS	H	PV Rooftop Block 1	0.042
SAF	H	PV Rooftop Block 1	0.141
NOE	H	PV Rooftop Block 1	0.041
BRI	H	PV Rooftop Block 1	0.057
USA	H	PV Rooftop Block 1	0.054
ANZ	H	PV Rooftop Block 1	0.135
PAC	L	Wind Onshore A Block 1	0.042
SWA	L	Wind Onshore A Block 1	0.05
SEA	L	Wind Onshore A Block 1	0.066
SEE	L	Wind Onshore A Block 1	0.063
IND	L	Wind Onshore A Block 1	0.09
CHN	L	Wind Onshore A Block 1	0.079
LEV	L	Wind Onshore A Block 1	0.093
EAF	L	Wind Onshore A Block 1	0.068
IRN	L	Wind Onshore A Block 1	0.094
SWE	L	Wind Onshore A Block 1	0.057
JSK	L	Wind Onshore A Block 1	0.081
NAF	L	Wind Onshore A Block 1	0.083
CEA	L	Wind Onshore A Block 1	0.056
WAF	L	Wind Onshore A Block 1	0.063
EAS	L	Wind Onshore A Block 1	0.071

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
EAE	L	Wind Onshore A Block 1	0.066
RUS	L	Wind Onshore A Block 1	0.071
SAF	L	Wind Onshore A Block 1	0.087
GLF	L	Wind Onshore A Block 1	0.107
CAS	L	Wind Onshore A Block 1	0.079
CEE	L	Wind Onshore A Block 1	0.053
NOE	L	Wind Onshore A Block 1	0.082
BRI	L	Wind Onshore A Block 1	0.084
USA	L	Wind Onshore A Block 1	0.086
CAN	L	Wind Onshore A Block 1	0.071
ANZ	L	Wind Onshore A Block 1	0.095
PAC	H	Wind Onshore A Block 1	0.038
SWA	H	Wind Onshore A Block 1	0.054
SEA	H	Wind Onshore A Block 1	0.058
SEE	H	Wind Onshore A Block 1	0.084
IND	H	Wind Onshore A Block 1	0.041
CHN	H	Wind Onshore A Block 1	0.069
LEV	H	Wind Onshore A Block 1	0.099
EAF	H	Wind Onshore A Block 1	0.066
IRN	H	Wind Onshore A Block 1	0.067
SWE	H	Wind Onshore A Block 1	0.111
JSK	H	Wind Onshore A Block 1	0.108
NAF	H	Wind Onshore A Block 1	0.116
CEA	H	Wind Onshore A Block 1	0.071
WAF	H	Wind Onshore A Block 1	0.056

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
EAS	H	Wind Onshore A Block 1	0.048
EAE	H	Wind Onshore A Block 1	0.091
RUS	H	Wind Onshore A Block 1	0.075
SAF	H	Wind Onshore A Block 1	0.097
GLF	H	Wind Onshore A Block 1	0.074
CAS	H	Wind Onshore A Block 1	0.066
CEE	H	Wind Onshore A Block 1	0.09
NOE	H	Wind Onshore A Block 1	0.095
BRI	H	Wind Onshore A Block 1	0.138
USA	H	Wind Onshore A Block 1	0.094
CAN	H	Wind Onshore A Block 1	0.085
ANZ	H	Wind Onshore A Block 1	0.09
PAC	L	Wind Onshore B Block 1	0.042
SWA	L	Wind Onshore B Block 1	0.045
SEA	L	Wind Onshore B Block 1	0.058
SEE	L	Wind Onshore B Block 1	0.052
IND	L	Wind Onshore B Block 1	0.055
CHN	L	Wind Onshore B Block 1	0.098
LEV	L	Wind Onshore B Block 1	0.104
EAF	L	Wind Onshore B Block 1	0.078
IRN	L	Wind Onshore B Block 1	0.119
SWE	L	Wind Onshore B Block 1	0.071
NAF	L	Wind Onshore B Block 1	0.135
CEA	L	Wind Onshore B Block 1	0.069
WAF	L	Wind Onshore B Block 1	0.053

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
EAS	L	Wind Onshore B Block 1	0.048
RUS	L	Wind Onshore B Block 1	0.085
SAF	L	Wind Onshore B Block 1	0.103
GLF	L	Wind Onshore B Block 1	0.107
CAS	L	Wind Onshore B Block 1	0.092
NOE	L	Wind Onshore B Block 1	0.088
USA	L	Wind Onshore B Block 1	0.094
CAN	L	Wind Onshore B Block 1	0.087
ANZ	L	Wind Onshore B Block 1	0.102
PAC	H	Wind Onshore B Block 1	0.034
SWA	H	Wind Onshore B Block 1	0.06
SEA	H	Wind Onshore B Block 1	0.046
SEE	H	Wind Onshore B Block 1	0.058
IND	H	Wind Onshore B Block 1	0.045
CHN	H	Wind Onshore B Block 1	0.078
LEV	H	Wind Onshore B Block 1	0.105
EAF	H	Wind Onshore B Block 1	0.074
IRN	H	Wind Onshore B Block 1	0.069
SWE	H	Wind Onshore B Block 1	0.194
NAF	H	Wind Onshore B Block 1	0.121
CEA	H	Wind Onshore B Block 1	0.079
WAF	H	Wind Onshore B Block 1	0.045
EAS	H	Wind Onshore B Block 1	0.033
RUS	H	Wind Onshore B Block 1	0.093
SAF	H	Wind Onshore B Block 1	0.107

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
GLF	H	Wind Onshore B Block 1	0.08
CAS	H	Wind Onshore B Block 1	0.069
NOE	H	Wind Onshore B Block 1	0.097
USA	H	Wind Onshore B Block 1	0.097
CAN	H	Wind Onshore B Block 1	0.085
ANZ	H	Wind Onshore B Block 1	0.089
PAC	L	Wind Offshore Block 1	0.065
SWA	L	Wind Offshore Block 1	0.093
SEA	L	Wind Offshore Block 1	0.073
SEE	L	Wind Offshore Block 1	0.09
IND	L	Wind Offshore Block 1	0.125
CHN	L	Wind Offshore Block 1	0.13
LEV	L	Wind Offshore Block 1	0.101
EAF	L	Wind Offshore Block 1	0.122
IRN	L	Wind Offshore Block 1	0.151
SWE	L	Wind Offshore Block 1	0.097
JSK	L	Wind Offshore Block 1	0.116
NAF	L	Wind Offshore Block 1	0.121
CEA	L	Wind Offshore Block 1	0.086
WAF	L	Wind Offshore Block 1	0.069
EAS	L	Wind Offshore Block 1	0.092
EAE	L	Wind Offshore Block 1	0.119
RUS	L	Wind Offshore Block 1	0.13
SAF	L	Wind Offshore Block 1	0.181
GLF	L	Wind Offshore Block 1	0.115

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAS	L	Wind Offshore Block 1	0.121
CEE	L	Wind Offshore Block 1	0.068
NOE	L	Wind Offshore Block 1	0.124
USA	L	Wind Offshore Block 1	0.052
CAN	L	Wind Offshore Block 1	0.128
ANZ	L	Wind Offshore Block 1	0.125
PAC	H	Wind Offshore Block 1	0.057
SWA	H	Wind Offshore Block 1	0.102
SEA	H	Wind Offshore Block 1	0.089
SEE	H	Wind Offshore Block 1	0.147
IND	H	Wind Offshore Block 1	0.055
CHN	H	Wind Offshore Block 1	0.141
LEV	H	Wind Offshore Block 1	0.153
EAF	H	Wind Offshore Block 1	0.087
IRN	H	Wind Offshore Block 1	0.103
SWE	H	Wind Offshore Block 1	0.169
JSK	H	Wind Offshore Block 1	0.157
NAF	H	Wind Offshore Block 1	0.169
CEA	H	Wind Offshore Block 1	0.142
WAF	H	Wind Offshore Block 1	0.047
EAS	H	Wind Offshore Block 1	0.045
EAE	H	Wind Offshore Block 1	0.231
RUS	H	Wind Offshore Block 1	0.182
SAF	H	Wind Offshore Block 1	0.106
GLF	H	Wind Offshore Block 1	0.09

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAS	H	Wind Offshore Block 1	0.143
CEE	H	Wind Offshore Block 1	0.13
NOE	H	Wind Offshore Block 1	0.179
USA	H	Wind Offshore Block 1	0.084
CAN	H	Wind Offshore Block 1	0.158
ANZ	H	Wind Offshore Block 1	0.122
PAC	L	Hydropower Block 1	0.151
SWA	L	Hydropower Block 1	0.396
SEA	L	Hydropower Block 1	0.235
SEE	L	Hydropower Block 1	0.146
IND	L	Hydropower Block 1	0.373
CHN	L	Hydropower Block 1	0.466
LEV	L	Hydropower Block 1	0.445
EAF	L	Hydropower Block 1	0.236
IRN	L	Hydropower Block 1	0.201
SWE	L	Hydropower Block 1	0.125
JSK	L	Hydropower Block 1	0.181
NAF	L	Hydropower Block 1	0.05
CEA	L	Hydropower Block 1	0.358
WAF	L	Hydropower Block 1	0.389
EAS	L	Hydropower Block 1	0.49
EAE	L	Hydropower Block 1	0.139
RUS	L	Hydropower Block 1	0.426
SAF	L	Hydropower Block 1	0.037
CAS	L	Hydropower Block 1	0.575

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CEE	L	Hydropower Block 1	0.234
NOE	L	Hydropower Block 1	0.23
BRI	L	Hydropower Block 1	0.063
USA	L	Hydropower Block 1	0.151
CAN	L	Hydropower Block 1	0.594
ANZ	L	Hydropower Block 1	0.265
PAC	H	Hydropower Block 1	0.233
SWA	H	Hydropower Block 1	0.326
SEA	H	Hydropower Block 1	0.481
SEE	H	Hydropower Block 1	0.259
IND	H	Hydropower Block 1	0.066
CHN	H	Hydropower Block 1	0.094
LEV	H	Hydropower Block 1	0.166
EAF	H	Hydropower Block 1	0.454
IRN	H	Hydropower Block 1	0.171
SWE	H	Hydropower Block 1	0.196
JSK	H	Hydropower Block 1	0.094
NAF	H	Hydropower Block 1	0.174
CEA	H	Hydropower Block 1	0.102
WAF	H	Hydropower Block 1	0.225
EAS	H	Hydropower Block 1	0.097
EAE	H	Hydropower Block 1	0.129
RUS	H	Hydropower Block 1	0.071
SAF	H	Hydropower Block 1	0.187
CAS	H	Hydropower Block 1	0.055

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CEE	H	Hydropower Block 1	0.154
NOE	H	Hydropower Block 1	0.519
BRI	H	Hydropower Block 1	0.241
USA	H	Hydropower Block 1	0.242
CAN	H	Hydropower Block 1	0.163
ANZ	H	Hydropower Block 1	0.166
PAC	L	PV Plant A Block 2	0.103
SWA	L	PV Plant A Block 2	0.075
SEA	L	PV Plant A Block 2	0.065
SEE	L	PV Plant A Block 2	0.162
IND	L	PV Plant A Block 2	0.113
CHN	L	PV Plant A Block 2	0.13
EAF	L	PV Plant A Block 2	0.079
SWE	L	PV Plant A Block 2	0.163
JSK	L	PV Plant A Block 2	0.134
CEA	L	PV Plant A Block 2	0.119
WAF	L	PV Plant A Block 2	0.106
EAS	L	PV Plant A Block 2	0.125
EAE	L	PV Plant A Block 2	0.164
RUS	L	PV Plant A Block 2	0.163
SAF	L	PV Plant A Block 2	0.059
CAS	L	PV Plant A Block 2	0.155
CEE	L	PV Plant A Block 2	0.162
NOE	L	PV Plant A Block 2	0.161
BRI	L	PV Plant A Block 2	0.143

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
USA	L	PV Plant A Block 2	0.149
CAN	L	PV Plant A Block 2	0.157
ANZ	L	PV Plant A Block 2	0.049
PAC	H	PV Plant A Block 2	0.132
SWA	H	PV Plant A Block 2	0.155
SEA	H	PV Plant A Block 2	0.156
SEE	H	PV Plant A Block 2	0.084
IND	H	PV Plant A Block 2	0.126
CHN	H	PV Plant A Block 2	0.103
EAF	H	PV Plant A Block 2	0.158
SWE	H	PV Plant A Block 2	0.079
JSK	H	PV Plant A Block 2	0.112
CEA	H	PV Plant A Block 2	0.128
WAF	H	PV Plant A Block 2	0.135
EAS	H	PV Plant A Block 2	0.106
EAE	H	PV Plant A Block 2	0.068
RUS	H	PV Plant A Block 2	0.066
SAF	H	PV Plant A Block 2	0.171
CAS	H	PV Plant A Block 2	0.078
CEE	H	PV Plant A Block 2	0.072
NOE	H	PV Plant A Block 2	0.052
BRI	H	PV Plant A Block 2	0.066
USA	H	PV Plant A Block 2	0.088
CAN	H	PV Plant A Block 2	0.08
ANZ	H	PV Plant A Block 2	0.164

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
PAC	L	PV Plant B Block 2	0.095
SWA	L	PV Plant B Block 2	0.097
SEA	L	PV Plant B Block 2	0.059
IND	L	PV Plant B Block 2	0.109
CHN	L	PV Plant B Block 2	0.111
EAF	L	PV Plant B Block 2	0.082
CEA	L	PV Plant B Block 2	0.121
WAF	L	PV Plant B Block 2	0.105
EAS	L	PV Plant B Block 2	0.108
EAE	L	PV Plant B Block 2	0.169
RUS	L	PV Plant B Block 2	0.155
SAF	L	PV Plant B Block 2	0.053
CAS	L	PV Plant B Block 2	0.156
NOE	L	PV Plant B Block 2	0.155
BRI	L	PV Plant B Block 2	0.138
USA	L	PV Plant B Block 2	0.15
CAN	L	PV Plant B Block 2	0.154
ANZ	L	PV Plant B Block 2	0.052
PAC	H	PV Plant B Block 2	0.141
SWA	H	PV Plant B Block 2	0.145
SEA	H	PV Plant B Block 2	0.162
IND	H	PV Plant B Block 2	0.131
CHN	H	PV Plant B Block 2	0.135
EAF	H	PV Plant B Block 2	0.16
CEA	H	PV Plant B Block 2	0.126

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
WAF	H	PV Plant B Block 2	0.136
EAS	H	PV Plant B Block 2	0.127
EAE	H	PV Plant B Block 2	0.063
RUS	H	PV Plant B Block 2	0.07
SAF	H	PV Plant B Block 2	0.183
CAS	H	PV Plant B Block 2	0.079
NOE	H	PV Plant B Block 2	0.051
BRI	H	PV Plant B Block 2	0.06
USA	H	PV Plant B Block 2	0.058
CAN	H	PV Plant B Block 2	0.07
ANZ	H	PV Plant B Block 2	0.17
PAC	L	PV Rooftop Block 2	0.116
SWA	L	PV Rooftop Block 2	0.08
SEA	L	PV Rooftop Block 2	0.073
SEE	L	PV Rooftop Block 2	0.162
IND	L	PV Rooftop Block 2	0.11
CHN	L	PV Rooftop Block 2	0.131
EAF	L	PV Rooftop Block 2	0.079
SWE	L	PV Rooftop Block 2	0.162
JSK	L	PV Rooftop Block 2	0.134
CEA	L	PV Rooftop Block 2	0.12
WAF	L	PV Rooftop Block 2	0.106
EAS	L	PV Rooftop Block 2	0.126
EAE	L	PV Rooftop Block 2	0.164
RUS	L	PV Rooftop Block 2	0.16

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
SAF	L	PV Rooftop Block 2	0.064
CAS	L	PV Rooftop Block 2	0.157
CEE	L	PV Rooftop Block 2	0.161
NOE	L	PV Rooftop Block 2	0.164
BRI	L	PV Rooftop Block 2	0.144
USA	L	PV Rooftop Block 2	0.15
CAN	L	PV Rooftop Block 2	0.159
ANZ	L	PV Rooftop Block 2	0.058
PAC	H	PV Rooftop Block 2	0.131
SWA	H	PV Rooftop Block 2	0.148
SEA	H	PV Rooftop Block 2	0.151
SEE	H	PV Rooftop Block 2	0.081
IND	H	PV Rooftop Block 2	0.132
CHN	H	PV Rooftop Block 2	0.097
EAF	H	PV Rooftop Block 2	0.156
SWE	H	PV Rooftop Block 2	0.079
JSK	H	PV Rooftop Block 2	0.11
CEA	H	PV Rooftop Block 2	0.13
WAF	H	PV Rooftop Block 2	0.139
EAS	H	PV Rooftop Block 2	0.096
EAE	H	PV Rooftop Block 2	0.07
RUS	H	PV Rooftop Block 2	0.063
SAF	H	PV Rooftop Block 2	0.161
CAS	H	PV Rooftop Block 2	0.079
CEE	H	PV Rooftop Block 2	0.074

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NOE	H	PV Rooftop Block 2	0.052
BRI	H	PV Rooftop Block 2	0.067
USA	H	PV Rooftop Block 2	0.093
CAN	H	PV Rooftop Block 2	0.084
ANZ	H	PV Rooftop Block 2	0.16
PAC	L	Wind Onshore A Block 2	0.165
SWA	L	Wind Onshore A Block 2	0.152
SEA	L	Wind Onshore A Block 2	0.14
SEE	L	Wind Onshore A Block 2	0.128
IND	L	Wind Onshore A Block 2	0.192
CHN	L	Wind Onshore A Block 2	0.147
LEV	L	Wind Onshore A Block 2	0.16
EAF	L	Wind Onshore A Block 2	0.152
IRN	L	Wind Onshore A Block 2	0.177
SWE	L	Wind Onshore A Block 2	0.106
JSK	L	Wind Onshore A Block 2	0.127
NAF	L	Wind Onshore A Block 2	0.142
CEA	L	Wind Onshore A Block 2	0.125
WAF	L	Wind Onshore A Block 2	0.121
EAS	L	Wind Onshore A Block 2	0.162
EAE	L	Wind Onshore A Block 2	0.117
RUS	L	Wind Onshore A Block 2	0.14
SAF	L	Wind Onshore A Block 2	0.151
GLF	L	Wind Onshore A Block 2	0.178
CAS	L	Wind Onshore A Block 2	0.174

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CEE	L	Wind Onshore A Block 2	0.099
NOE	L	Wind Onshore A Block 2	0.133
BRI	L	Wind Onshore A Block 2	0.126
USA	L	Wind Onshore A Block 2	0.127
CAN	L	Wind Onshore A Block 2	0.137
ANZ	L	Wind Onshore A Block 2	0.155
PAC	H	Wind Onshore A Block 2	0.133
SWA	H	Wind Onshore A Block 2	0.142
SEA	H	Wind Onshore A Block 2	0.123
SEE	H	Wind Onshore A Block 2	0.162
IND	H	Wind Onshore A Block 2	0.074
CHN	H	Wind Onshore A Block 2	0.153
LEV	H	Wind Onshore A Block 2	0.144
EAF	H	Wind Onshore A Block 2	0.141
IRN	H	Wind Onshore A Block 2	0.132
SWE	H	Wind Onshore A Block 2	0.198
JSK	H	Wind Onshore A Block 2	0.176
NAF	H	Wind Onshore A Block 2	0.191
CEA	H	Wind Onshore A Block 2	0.162
WAF	H	Wind Onshore A Block 2	0.153
EAS	H	Wind Onshore A Block 2	0.124
EAE	H	Wind Onshore A Block 2	0.167
RUS	H	Wind Onshore A Block 2	0.166
SAF	H	Wind Onshore A Block 2	0.159
GLF	H	Wind Onshore A Block 2	0.144

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAS	H	Wind Onshore A Block 2	0.146
CEE	H	Wind Onshore A Block 2	0.184
NOE	H	Wind Onshore A Block 2	0.162
BRI	H	Wind Onshore A Block 2	0.209
USA	H	Wind Onshore A Block 2	0.175
CAN	H	Wind Onshore A Block 2	0.173
ANZ	H	Wind Onshore A Block 2	0.15
PAC	L	Wind Onshore B Block 2	0.197
SWA	L	Wind Onshore B Block 2	0.141
SEA	L	Wind Onshore B Block 2	0.154
SEE	L	Wind Onshore B Block 2	0.139
IND	L	Wind Onshore B Block 2	0.179
CHN	L	Wind Onshore B Block 2	0.169
LEV	L	Wind Onshore B Block 2	0.152
EAF	L	Wind Onshore B Block 2	0.155
IRN	L	Wind Onshore B Block 2	0.192
SWE	L	Wind Onshore B Block 2	0.087
NAF	L	Wind Onshore B Block 2	0.178
CEA	L	Wind Onshore B Block 2	0.141
WAF	L	Wind Onshore B Block 2	0.141
EAS	L	Wind Onshore B Block 2	0.154
EAE	L	Wind Onshore B Block 2	0.121
RUS	L	Wind Onshore B Block 2	0.133
SAF	L	Wind Onshore B Block 2	0.158
GLF	L	Wind Onshore B Block 2	0.178

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAS	L	Wind Onshore B Block 2	0.177
NOE	L	Wind Onshore B Block 2	0.136
BRI	L	Wind Onshore B Block 2	0.132
USA	L	Wind Onshore B Block 2	0.15
CAN	L	Wind Onshore B Block 2	0.145
ANZ	L	Wind Onshore B Block 2	0.154
PAC	H	Wind Onshore B Block 2	0.097
SWA	H	Wind Onshore B Block 2	0.144
SEA	H	Wind Onshore B Block 2	0.123
SEE	H	Wind Onshore B Block 2	0.226
IND	H	Wind Onshore B Block 2	0.094
CHN	H	Wind Onshore B Block 2	0.143
LEV	H	Wind Onshore B Block 2	0.146
EAF	H	Wind Onshore B Block 2	0.139
IRN	H	Wind Onshore B Block 2	0.12
SWE	H	Wind Onshore B Block 2	0.219
NAF	H	Wind Onshore B Block 2	0.175
CEA	H	Wind Onshore B Block 2	0.148
WAF	H	Wind Onshore B Block 2	0.151
EAS	H	Wind Onshore B Block 2	0.143
EAE	H	Wind Onshore B Block 2	0.152
RUS	H	Wind Onshore B Block 2	0.167
SAF	H	Wind Onshore B Block 2	0.156
GLF	H	Wind Onshore B Block 2	0.132
CAS	H	Wind Onshore B Block 2	0.142

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NOE	H	Wind Onshore B Block 2	0.156
BRI	H	Wind Onshore B Block 2	0.208
USA	H	Wind Onshore B Block 2	0.161
CAN	H	Wind Onshore B Block 2	0.157
ANZ	H	Wind Onshore B Block 2	0.149
PAC	L	Wind Offshore Block 2	0.186
SWA	L	Wind Offshore Block 2	0.088
SEA	L	Wind Offshore Block 2	0.074
SEE	L	Wind Offshore Block 2	0.168
IND	L	Wind Offshore Block 2	0.197
CHN	L	Wind Offshore Block 2	0.195
LEV	L	Wind Offshore Block 2	0.149
EAF	L	Wind Offshore Block 2	0.161
IRN	L	Wind Offshore Block 2	0.146
SWE	L	Wind Offshore Block 2	0.154
JSK	L	Wind Offshore Block 2	0.192
NAF	L	Wind Offshore Block 2	0.192
CEA	L	Wind Offshore Block 2	0.134
WAF	L	Wind Offshore Block 2	0.147
EAS	L	Wind Offshore Block 2	0.117
EAE	L	Wind Offshore Block 2	0.173
RUS	L	Wind Offshore Block 2	0.196
SAF	L	Wind Offshore Block 2	0.223
GLF	L	Wind Offshore Block 2	0.143
CAS	L	Wind Offshore Block 2	0.221

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CEE	L	Wind Offshore Block 2	0.159
NOE	L	Wind Offshore Block 2	0.171
BRI	L	Wind Offshore Block 2	0.148
USA	L	Wind Offshore Block 2	0.077
CAN	L	Wind Offshore Block 2	0.228
ANZ	L	Wind Offshore Block 2	0.173
PAC	H	Wind Offshore Block 2	0.193
SWA	H	Wind Offshore Block 2	0.098
SEA	H	Wind Offshore Block 2	0.088
SEE	H	Wind Offshore Block 2	0.264
IND	H	Wind Offshore Block 2	0.087
CHN	H	Wind Offshore Block 2	0.222
LEV	H	Wind Offshore Block 2	0.191
EAF	H	Wind Offshore Block 2	0.157
IRN	H	Wind Offshore Block 2	0.082
SWE	H	Wind Offshore Block 2	0.253
JSK	H	Wind Offshore Block 2	0.246
NAF	H	Wind Offshore Block 2	0.233
CEA	H	Wind Offshore Block 2	0.194
WAF	H	Wind Offshore Block 2	0.154
EAS	H	Wind Offshore Block 2	0.126
EAE	H	Wind Offshore Block 2	0.295
RUS	H	Wind Offshore Block 2	0.242
SAF	H	Wind Offshore Block 2	0.193
GLF	H	Wind Offshore Block 2	0.125

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAS	H	Wind Offshore Block 2	0.245
CEE	H	Wind Offshore Block 2	0.235
NOE	H	Wind Offshore Block 2	0.236
BRI	H	Wind Offshore Block 2	0.297
USA	H	Wind Offshore Block 2	0.154
CAN	H	Wind Offshore Block 2	0.226
ANZ	H	Wind Offshore Block 2	0.163
PAC	L	PV Plant A Block 3	0.14
SWA	L	PV Plant A Block 3	0.122
SEA	L	PV Plant A Block 3	0.121
SEE	L	PV Plant A Block 3	0.175
IND	L	PV Plant A Block 3	0.134
CHN	L	PV Plant A Block 3	0.152
EAF	L	PV Plant A Block 3	0.119
IRN	L	PV Plant A Block 3	0.172
SWE	L	PV Plant A Block 3	0.175
JSK	L	PV Plant A Block 3	0.145
CEA	L	PV Plant A Block 3	0.149
WAF	L	PV Plant A Block 3	0.126
EAS	L	PV Plant A Block 3	0.132
EAE	L	PV Plant A Block 3	0.177
RUS	L	PV Plant A Block 3	0.175
SAF	L	PV Plant A Block 3	0.084
CAS	L	PV Plant A Block 3	0.18
CEE	L	PV Plant A Block 3	0.164

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
USA	L	PV Plant A Block 3	0.169
CAN	L	PV Plant A Block 3	0.177
ANZ	L	PV Plant A Block 3	0.1
PAC	H	PV Plant A Block 3	0.141
SWA	H	PV Plant A Block 3	0.163
SEA	H	PV Plant A Block 3	0.16
SEE	H	PV Plant A Block 3	0.101
IND	H	PV Plant A Block 3	0.158
CHN	H	PV Plant A Block 3	0.139
EAF	H	PV Plant A Block 3	0.17
IRN	H	PV Plant A Block 3	0.119
SWE	H	PV Plant A Block 3	0.099
JSK	H	PV Plant A Block 3	0.13
CEA	H	PV Plant A Block 3	0.138
WAF	H	PV Plant A Block 3	0.159
EAS	H	PV Plant A Block 3	0.162
EAE	H	PV Plant A Block 3	0.083
RUS	H	PV Plant A Block 3	0.094
SAF	H	PV Plant A Block 3	0.187
CAS	H	PV Plant A Block 3	0.1
CEE	H	PV Plant A Block 3	0.102
USA	H	PV Plant A Block 3	0.115
CAN	H	PV Plant A Block 3	0.102
ANZ	H	PV Plant A Block 3	0.173
PAC	L	PV Plant B Block 3	0.123

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
SWA	L	PV Plant B Block 3	0.111
SEA	L	PV Plant B Block 3	0.12
IND	L	PV Plant B Block 3	0.121
CHN	L	PV Plant B Block 3	0.162
EAF	L	PV Plant B Block 3	0.113
SWE	L	PV Plant B Block 3	0.182
CEA	L	PV Plant B Block 3	0.143
WAF	L	PV Plant B Block 3	0.131
EAS	L	PV Plant B Block 3	0.122
EAE	L	PV Plant B Block 3	0.185
RUS	L	PV Plant B Block 3	0.17
SAF	L	PV Plant B Block 3	0.086
CAS	L	PV Plant B Block 3	0.181
USA	L	PV Plant B Block 3	0.184
CAN	L	PV Plant B Block 3	0.177
ANZ	L	PV Plant B Block 3	0.094
PAC	H	PV Plant B Block 3	0.146
SWA	H	PV Plant B Block 3	0.169
SEA	H	PV Plant B Block 3	0.16
IND	H	PV Plant B Block 3	0.15
CHN	H	PV Plant B Block 3	0.133
EAF	H	PV Plant B Block 3	0.174
SWE	H	PV Plant B Block 3	0.113
CEA	H	PV Plant B Block 3	0.137
WAF	H	PV Plant B Block 3	0.168

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
EAS	H	PV Plant B Block 3	0.157
EAE	H	PV Plant B Block 3	0.077
RUS	H	PV Plant B Block 3	0.102
SAF	H	PV Plant B Block 3	0.197
CAS	H	PV Plant B Block 3	0.096
USA	H	PV Plant B Block 3	0.119
CAN	H	PV Plant B Block 3	0.098
ANZ	H	PV Plant B Block 3	0.182
PAC	L	PV Rooftop Block 3	0.142
SWA	L	PV Rooftop Block 3	0.133
SEA	L	PV Rooftop Block 3	0.122
SEE	L	PV Rooftop Block 3	0.177
IND	L	PV Rooftop Block 3	0.129
CHN	L	PV Rooftop Block 3	0.148
EAF	L	PV Rooftop Block 3	0.131
IRN	L	PV Rooftop Block 3	0.165
SWE	L	PV Rooftop Block 3	0.175
JSK	L	PV Rooftop Block 3	0.144
CEA	L	PV Rooftop Block 3	0.15
WAF	L	PV Rooftop Block 3	0.123
EAS	L	PV Rooftop Block 3	0.131
EAE	L	PV Rooftop Block 3	0.174
RUS	L	PV Rooftop Block 3	0.172
SAF	L	PV Rooftop Block 3	0.079
CAS	L	PV Rooftop Block 3	0.185

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CEE	L	PV Rooftop Block 3	0.166
USA	L	PV Rooftop Block 3	0.16
CAN	L	PV Rooftop Block 3	0.171
ANZ	L	PV Rooftop Block 3	0.098
PAC	H	PV Rooftop Block 3	0.146
SWA	H	PV Rooftop Block 3	0.148
SEA	H	PV Rooftop Block 3	0.162
SEE	H	PV Rooftop Block 3	0.101
IND	H	PV Rooftop Block 3	0.163
CHN	H	PV Rooftop Block 3	0.136
EAF	H	PV Rooftop Block 3	0.161
IRN	H	PV Rooftop Block 3	0.118
SWE	H	PV Rooftop Block 3	0.1
JSK	H	PV Rooftop Block 3	0.128
CEA	H	PV Rooftop Block 3	0.138
WAF	H	PV Rooftop Block 3	0.158
EAS	H	PV Rooftop Block 3	0.162
EAE	H	PV Rooftop Block 3	0.087
RUS	H	PV Rooftop Block 3	0.098
SAF	H	PV Rooftop Block 3	0.18
CAS	H	PV Rooftop Block 3	0.109
CEE	H	PV Rooftop Block 3	0.092
USA	H	PV Rooftop Block 3	0.115
CAN	H	PV Rooftop Block 3	0.096
ANZ	H	PV Rooftop Block 3	0.168

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
PAC	L	Wind Onshore A Block 3	0.217
SWA	L	Wind Onshore A Block 3	0.21
SEA	L	Wind Onshore A Block 3	0.213
SEE	L	Wind Onshore A Block 3	0.177
IND	L	Wind Onshore A Block 3	0.267
CHN	L	Wind Onshore A Block 3	0.198
LEV	L	Wind Onshore A Block 3	0.231
EAF	L	Wind Onshore A Block 3	0.209
IRN	L	Wind Onshore A Block 3	0.241
SWE	L	Wind Onshore A Block 3	0.142
JSK	L	Wind Onshore A Block 3	0.174
NAF	L	Wind Onshore A Block 3	0.204
CEA	L	Wind Onshore A Block 3	0.18
WAF	L	Wind Onshore A Block 3	0.153
EAS	L	Wind Onshore A Block 3	0.203
EAE	L	Wind Onshore A Block 3	0.164
RUS	L	Wind Onshore A Block 3	0.185
SAF	L	Wind Onshore A Block 3	0.206
GLF	L	Wind Onshore A Block 3	0.223
CAS	L	Wind Onshore A Block 3	0.227
CEE	L	Wind Onshore A Block 3	0.137
NOE	L	Wind Onshore A Block 3	0.173
BRI	L	Wind Onshore A Block 3	0.169
USA	L	Wind Onshore A Block 3	0.174
CAN	L	Wind Onshore A Block 3	0.186

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
ANZ	L	Wind Onshore A Block 3	0.22
PAC	H	Wind Onshore A Block 3	0.2
SWA	H	Wind Onshore A Block 3	0.187
SEA	H	Wind Onshore A Block 3	0.189
SEE	H	Wind Onshore A Block 3	0.221
IND	H	Wind Onshore A Block 3	0.118
CHN	H	Wind Onshore A Block 3	0.224
LEV	H	Wind Onshore A Block 3	0.182
EAF	H	Wind Onshore A Block 3	0.206
IRN	H	Wind Onshore A Block 3	0.178
SWE	H	Wind Onshore A Block 3	0.262
JSK	H	Wind Onshore A Block 3	0.237
NAF	H	Wind Onshore A Block 3	0.24
CEA	H	Wind Onshore A Block 3	0.226
WAF	H	Wind Onshore A Block 3	0.224
EAS	H	Wind Onshore A Block 3	0.224
EAE	H	Wind Onshore A Block 3	0.225
RUS	H	Wind Onshore A Block 3	0.22
SAF	H	Wind Onshore A Block 3	0.214
GLF	H	Wind Onshore A Block 3	0.198
CAS	H	Wind Onshore A Block 3	0.2
CEE	H	Wind Onshore A Block 3	0.244
NOE	H	Wind Onshore A Block 3	0.214
BRI	H	Wind Onshore A Block 3	0.268
USA	H	Wind Onshore A Block 3	0.238

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAN	H	Wind Onshore A Block 3	0.232
ANZ	H	Wind Onshore A Block 3	0.204
PAC	L	Wind Onshore B Block 3	0.254
SWA	L	Wind Onshore B Block 3	0.207
SEA	L	Wind Onshore B Block 3	0.211
SEE	L	Wind Onshore B Block 3	0.179
IND	L	Wind Onshore B Block 3	0.227
CHN	L	Wind Onshore B Block 3	0.209
LEV	L	Wind Onshore B Block 3	0.211
EAF	L	Wind Onshore B Block 3	0.213
IRN	L	Wind Onshore B Block 3	0.254
SWE	L	Wind Onshore B Block 3	0.15
NAF	L	Wind Onshore B Block 3	0.229
CEA	L	Wind Onshore B Block 3	0.202
WAF	L	Wind Onshore B Block 3	0.164
EAS	L	Wind Onshore B Block 3	0.208
EAE	L	Wind Onshore B Block 3	0.169
RUS	L	Wind Onshore B Block 3	0.179
SAF	L	Wind Onshore B Block 3	0.203
GLF	L	Wind Onshore B Block 3	0.229
CAS	L	Wind Onshore B Block 3	0.225
NOE	L	Wind Onshore B Block 3	0.177
BRI	L	Wind Onshore B Block 3	0.181
USA	L	Wind Onshore B Block 3	0.188
CAN	L	Wind Onshore B Block 3	0.195

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
ANZ	L	Wind Onshore B Block 3	0.216
PAC	H	Wind Onshore B Block 3	0.145
SWA	H	Wind Onshore B Block 3	0.189
SEA	H	Wind Onshore B Block 3	0.194
SEE	H	Wind Onshore B Block 3	0.277
IND	H	Wind Onshore B Block 3	0.168
CHN	H	Wind Onshore B Block 3	0.22
LEV	H	Wind Onshore B Block 3	0.196
EAF	H	Wind Onshore B Block 3	0.198
IRN	H	Wind Onshore B Block 3	0.166
SWE	H	Wind Onshore B Block 3	0.251
NAF	H	Wind Onshore B Block 3	0.226
CEA	H	Wind Onshore B Block 3	0.197
WAF	H	Wind Onshore B Block 3	0.236
EAS	H	Wind Onshore B Block 3	0.218
EAE	H	Wind Onshore B Block 3	0.215
RUS	H	Wind Onshore B Block 3	0.219
SAF	H	Wind Onshore B Block 3	0.21
GLF	H	Wind Onshore B Block 3	0.192
CAS	H	Wind Onshore B Block 3	0.214
NOE	H	Wind Onshore B Block 3	0.209
BRI	H	Wind Onshore B Block 3	0.271
USA	H	Wind Onshore B Block 3	0.225
CAN	H	Wind Onshore B Block 3	0.213
ANZ	H	Wind Onshore B Block 3	0.218

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
PAC	L	Wind Offshore Block 3	0.134
SWA	L	Wind Offshore Block 3	0.191
SEA	L	Wind Offshore Block 3	0.217
SEE	L	Wind Offshore Block 3	0.201
IND	L	Wind Offshore Block 3	0.25
CHN	L	Wind Offshore Block 3	0.136
LEV	L	Wind Offshore Block 3	0.275
EAF	L	Wind Offshore Block 3	0.294
IRN	L	Wind Offshore Block 3	0.185
SWE	L	Wind Offshore Block 3	0.22
JSK	L	Wind Offshore Block 3	0.242
NAF	L	Wind Offshore Block 3	0.194
CEA	L	Wind Offshore Block 3	0.121
WAF	L	Wind Offshore Block 3	0.227
EAS	L	Wind Offshore Block 3	0.1
EAE	L	Wind Offshore Block 3	0.174
RUS	L	Wind Offshore Block 3	0.203
SAF	L	Wind Offshore Block 3	0.249
GLF	L	Wind Offshore Block 3	0.29
CAS	L	Wind Offshore Block 3	0.26
NOE	L	Wind Offshore Block 3	0.241
BRI	L	Wind Offshore Block 3	0.259
USA	L	Wind Offshore Block 3	0.119
CAN	L	Wind Offshore Block 3	0.265
ANZ	L	Wind Offshore Block 3	0.247

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
PAC	H	Wind Offshore Block 3	0.129
SWA	H	Wind Offshore Block 3	0.195
SEA	H	Wind Offshore Block 3	0.21
SEE	H	Wind Offshore Block 3	0.293
IND	H	Wind Offshore Block 3	0.131
CHN	H	Wind Offshore Block 3	0.15
LEV	H	Wind Offshore Block 3	0.196
EAF	H	Wind Offshore Block 3	0.242
IRN	H	Wind Offshore Block 3	0.083
SWE	H	Wind Offshore Block 3	0.264
JSK	H	Wind Offshore Block 3	0.282
NAF	H	Wind Offshore Block 3	0.252
CEA	H	Wind Offshore Block 3	0.152
WAF	H	Wind Offshore Block 3	0.314
EAS	H	Wind Offshore Block 3	0.119
EAE	H	Wind Offshore Block 3	0.277
RUS	H	Wind Offshore Block 3	0.252
SAF	H	Wind Offshore Block 3	0.305
GLF	H	Wind Offshore Block 3	0.18
CAS	H	Wind Offshore Block 3	0.286
NOE	H	Wind Offshore Block 3	0.296
BRI	H	Wind Offshore Block 3	0.269
USA	H	Wind Offshore Block 3	0.179
CAN	H	Wind Offshore Block 3	0.265
ANZ	H	Wind Offshore Block 3	0.239

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
PAC	L	PV Plant A Block 4	0.149
SWA	L	PV Plant A Block 4	0.135
SEA	L	PV Plant A Block 4	0.148
SEE	L	PV Plant A Block 4	0.199
IND	L	PV Plant A Block 4	0.15
CHN	L	PV Plant A Block 4	0.175
LEV	L	PV Plant A Block 4	0.208
EAF	L	PV Plant A Block 4	0.156
IRN	L	PV Plant A Block 4	0.201
SWE	L	PV Plant A Block 4	0.192
NAF	L	PV Plant A Block 4	0.193
CEA	L	PV Plant A Block 4	0.172
WAF	L	PV Plant A Block 4	0.149
EAS	L	PV Plant A Block 4	0.143
RUS	L	PV Plant A Block 4	0.187
SAF	L	PV Plant A Block 4	0.115
GLF	L	PV Plant A Block 4	0.173
CAS	L	PV Plant A Block 4	0.2
BRI	L	PV Plant A Block 4	0.18
USA	L	PV Plant A Block 4	0.194
CAN	L	PV Plant A Block 4	0.19
ANZ	L	PV Plant A Block 4	0.134
PAC	H	PV Plant A Block 4	0.171
SWA	H	PV Plant A Block 4	0.19
SEA	H	PV Plant A Block 4	0.175

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
SEE	H	PV Plant A Block 4	0.129
IND	H	PV Plant A Block 4	0.186
CHN	H	PV Plant A Block 4	0.155
LEV	H	PV Plant A Block 4	0.143
EAF	H	PV Plant A Block 4	0.183
IRN	H	PV Plant A Block 4	0.147
SWE	H	PV Plant A Block 4	0.13
NAF	H	PV Plant A Block 4	0.153
CEA	H	PV Plant A Block 4	0.163
WAF	H	PV Plant A Block 4	0.19
EAS	H	PV Plant A Block 4	0.178
RUS	H	PV Plant A Block 4	0.135
SAF	H	PV Plant A Block 4	0.205
GLF	H	PV Plant A Block 4	0.183
CAS	H	PV Plant A Block 4	0.133
BRI	H	PV Plant A Block 4	0.173
USA	H	PV Plant A Block 4	0.14
CAN	H	PV Plant A Block 4	0.12
ANZ	H	PV Plant A Block 4	0.179
PAC	L	PV Plant B Block 4	0.155
SWA	L	PV Plant B Block 4	0.118
SEA	L	PV Plant B Block 4	0.135
SEE	L	PV Plant B Block 4	0.203
IND	L	PV Plant B Block 4	0.161
CHN	L	PV Plant B Block 4	0.183

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
LEV	L	PV Plant B Block 4	0.207
EAF	L	PV Plant B Block 4	0.154
IRN	L	PV Plant B Block 4	0.205
SWE	L	PV Plant B Block 4	0.181
NAF	L	PV Plant B Block 4	0.198
CEA	L	PV Plant B Block 4	0.18
WAF	L	PV Plant B Block 4	0.148
EAS	L	PV Plant B Block 4	0.148
RUS	L	PV Plant B Block 4	0.192
SAF	L	PV Plant B Block 4	0.109
GLF	L	PV Plant B Block 4	0.169
CAS	L	PV Plant B Block 4	0.2
USA	L	PV Plant B Block 4	0.199
CAN	L	PV Plant B Block 4	0.19
ANZ	L	PV Plant B Block 4	0.135
PAC	H	PV Plant B Block 4	0.173
SWA	H	PV Plant B Block 4	0.213
SEA	H	PV Plant B Block 4	0.185
SEE	H	PV Plant B Block 4	0.125
IND	H	PV Plant B Block 4	0.19
CHN	H	PV Plant B Block 4	0.157
LEV	H	PV Plant B Block 4	0.155
EAF	H	PV Plant B Block 4	0.186
IRN	H	PV Plant B Block 4	0.154
SWE	H	PV Plant B Block 4	0.127

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NAF	H	PV Plant B Block 4	0.162
CEA	H	PV Plant B Block 4	0.157
WAF	H	PV Plant B Block 4	0.19
EAS	H	PV Plant B Block 4	0.192
RUS	H	PV Plant B Block 4	0.131
SAF	H	PV Plant B Block 4	0.207
GLF	H	PV Plant B Block 4	0.188
CAS	H	PV Plant B Block 4	0.124
USA	H	PV Plant B Block 4	0.135
CAN	H	PV Plant B Block 4	0.12
ANZ	H	PV Plant B Block 4	0.178
PAC	L	PV Rooftop Block 4	0.155
SWA	L	PV Rooftop Block 4	0.148
SEA	L	PV Rooftop Block 4	0.152
SEE	L	PV Rooftop Block 4	0.198
IND	L	PV Rooftop Block 4	0.147
CHN	L	PV Rooftop Block 4	0.165
LEV	L	PV Rooftop Block 4	0.202
EAF	L	PV Rooftop Block 4	0.153
IRN	L	PV Rooftop Block 4	0.185
SWE	L	PV Rooftop Block 4	0.192
NAF	L	PV Rooftop Block 4	0.189
CEA	L	PV Rooftop Block 4	0.169
WAF	L	PV Rooftop Block 4	0.151
EAS	L	PV Rooftop Block 4	0.142

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
RUS	L	PV Rooftop Block 4	0.193
SAF	L	PV Rooftop Block 4	0.119
GLF	L	PV Rooftop Block 4	0.165
CAS	L	PV Rooftop Block 4	0.199
BRI	L	PV Rooftop Block 4	0.199
USA	L	PV Rooftop Block 4	0.192
CAN	L	PV Rooftop Block 4	0.19
ANZ	L	PV Rooftop Block 4	0.141
PAC	H	PV Rooftop Block 4	0.165
SWA	H	PV Rooftop Block 4	0.176
SEA	H	PV Rooftop Block 4	0.171
SEE	H	PV Rooftop Block 4	0.126
IND	H	PV Rooftop Block 4	0.183
CHN	H	PV Rooftop Block 4	0.154
LEV	H	PV Rooftop Block 4	0.14
EAF	H	PV Rooftop Block 4	0.18
IRN	H	PV Rooftop Block 4	0.165
SWE	H	PV Rooftop Block 4	0.132
NAF	H	PV Rooftop Block 4	0.141
CEA	H	PV Rooftop Block 4	0.171
WAF	H	PV Rooftop Block 4	0.189
EAS	H	PV Rooftop Block 4	0.173
RUS	H	PV Rooftop Block 4	0.134
SAF	H	PV Rooftop Block 4	0.209
GLF	H	PV Rooftop Block 4	0.185

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAS	H	PV Rooftop Block 4	0.133
BRI	H	PV Rooftop Block 4	0.14
USA	H	PV Rooftop Block 4	0.149
CAN	H	PV Rooftop Block 4	0.119
ANZ	H	PV Rooftop Block 4	0.171
PAC	L	Wind Onshore A Block 4	0.244
SWA	L	Wind Onshore A Block 4	0.272
SEA	L	Wind Onshore A Block 4	0.267
SEE	L	Wind Onshore A Block 4	0.231
IND	L	Wind Onshore A Block 4	0.313
CHN	L	Wind Onshore A Block 4	0.254
LEV	L	Wind Onshore A Block 4	0.299
EAF	L	Wind Onshore A Block 4	0.277
IRN	L	Wind Onshore A Block 4	0.301
SWE	L	Wind Onshore A Block 4	0.178
JSK	L	Wind Onshore A Block 4	0.22
NAF	L	Wind Onshore A Block 4	0.27
CEA	L	Wind Onshore A Block 4	0.254
WAF	L	Wind Onshore A Block 4	0.213
EAS	L	Wind Onshore A Block 4	0.272
EAE	L	Wind Onshore A Block 4	0.204
RUS	L	Wind Onshore A Block 4	0.234
SAF	L	Wind Onshore A Block 4	0.263
GLF	L	Wind Onshore A Block 4	0.277
CAS	L	Wind Onshore A Block 4	0.278

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CEE	L	Wind Onshore A Block 4	0.188
NOE	L	Wind Onshore A Block 4	0.217
BRI	L	Wind Onshore A Block 4	0.2
USA	L	Wind Onshore A Block 4	0.232
CAN	L	Wind Onshore A Block 4	0.235
ANZ	L	Wind Onshore A Block 4	0.279
PAC	H	Wind Onshore A Block 4	0.291
SWA	H	Wind Onshore A Block 4	0.238
SEA	H	Wind Onshore A Block 4	0.251
SEE	H	Wind Onshore A Block 4	0.276
IND	H	Wind Onshore A Block 4	0.183
CHN	H	Wind Onshore A Block 4	0.283
LEV	H	Wind Onshore A Block 4	0.22
EAF	H	Wind Onshore A Block 4	0.272
IRN	H	Wind Onshore A Block 4	0.218
SWE	H	Wind Onshore A Block 4	0.319
JSK	H	Wind Onshore A Block 4	0.299
NAF	H	Wind Onshore A Block 4	0.284
CEA	H	Wind Onshore A Block 4	0.289
WAF	H	Wind Onshore A Block 4	0.313
EAS	H	Wind Onshore A Block 4	0.294
EAE	H	Wind Onshore A Block 4	0.263
RUS	H	Wind Onshore A Block 4	0.279
SAF	H	Wind Onshore A Block 4	0.263
GLF	H	Wind Onshore A Block 4	0.248

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAS	H	Wind Onshore A Block 4	0.269
CEE	H	Wind Onshore A Block 4	0.307
NOE	H	Wind Onshore A Block 4	0.276
BRI	H	Wind Onshore A Block 4	0.334
USA	H	Wind Onshore A Block 4	0.295
CAN	H	Wind Onshore A Block 4	0.292
ANZ	H	Wind Onshore A Block 4	0.243
PAC	L	Wind Onshore B Block 4	0.31
SWA	L	Wind Onshore B Block 4	0.256
SEA	L	Wind Onshore B Block 4	0.26
SEE	L	Wind Onshore B Block 4	0.223
IND	L	Wind Onshore B Block 4	0.253
CHN	L	Wind Onshore B Block 4	0.259
LEV	L	Wind Onshore B Block 4	0.279
EAF	L	Wind Onshore B Block 4	0.276
IRN	L	Wind Onshore B Block 4	0.314
SWE	L	Wind Onshore B Block 4	0.231
NAF	L	Wind Onshore B Block 4	0.291
CEA	L	Wind Onshore B Block 4	0.272
WAF	L	Wind Onshore B Block 4	0.207
EAS	L	Wind Onshore B Block 4	0.258
EAE	L	Wind Onshore B Block 4	0.21
RUS	L	Wind Onshore B Block 4	0.243
SAF	L	Wind Onshore B Block 4	0.26
GLF	L	Wind Onshore B Block 4	0.306

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CAS	L	Wind Onshore B Block 4	0.264
NOE	L	Wind Onshore B Block 4	0.23
BRI	L	Wind Onshore B Block 4	0.222
USA	L	Wind Onshore B Block 4	0.232
CAN	L	Wind Onshore B Block 4	0.251
ANZ	L	Wind Onshore B Block 4	0.264
PAC	H	Wind Onshore B Block 4	0.198
SWA	H	Wind Onshore B Block 4	0.242
SEA	H	Wind Onshore B Block 4	0.268
SEE	H	Wind Onshore B Block 4	0.326
IND	H	Wind Onshore B Block 4	0.26
CHN	H	Wind Onshore B Block 4	0.287
LEV	H	Wind Onshore B Block 4	0.241
EAF	H	Wind Onshore B Block 4	0.278
IRN	H	Wind Onshore B Block 4	0.214
SWE	H	Wind Onshore B Block 4	0.279
NAF	H	Wind Onshore B Block 4	0.276
CEA	H	Wind Onshore B Block 4	0.25
WAF	H	Wind Onshore B Block 4	0.313
EAS	H	Wind Onshore B Block 4	0.285
EAE	H	Wind Onshore B Block 4	0.269
RUS	H	Wind Onshore B Block 4	0.293
SAF	H	Wind Onshore B Block 4	0.261
GLF	H	Wind Onshore B Block 4	0.224
CAS	H	Wind Onshore B Block 4	0.278

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NOE	H	Wind Onshore B Block 4	0.287
BRI	H	Wind Onshore B Block 4	0.328
USA	H	Wind Onshore B Block 4	0.295
CAN	H	Wind Onshore B Block 4	0.28
ANZ	H	Wind Onshore B Block 4	0.267
PAC	L	Wind Offshore Block 4	0.39
SWA	L	Wind Offshore Block 4	0.296
SEA	L	Wind Offshore Block 4	0.171
SEE	L	Wind Offshore Block 4	0.279
IND	L	Wind Offshore Block 4	0.395
CHN	L	Wind Offshore Block 4	0.177
LEV	L	Wind Offshore Block 4	0.333
EAF	L	Wind Offshore Block 4	0.31
SWE	L	Wind Offshore Block 4	0.189
JSK	L	Wind Offshore Block 4	0.276
NAF	L	Wind Offshore Block 4	0.316
CEA	L	Wind Offshore Block 4	0.161
WAF	L	Wind Offshore Block 4	0.314
EAS	L	Wind Offshore Block 4	0.076
EAE	L	Wind Offshore Block 4	0.205
RUS	L	Wind Offshore Block 4	0.28
SAF	L	Wind Offshore Block 4	0.257
GLF	L	Wind Offshore Block 4	0.288
CAS	L	Wind Offshore Block 4	0.318
CEE	L	Wind Offshore Block 4	0.279

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NOE	L	Wind Offshore Block 4	0.278
BRI	L	Wind Offshore Block 4	0.24
USA	L	Wind Offshore Block 4	0.231
CAN	L	Wind Offshore Block 4	0.296
ANZ	L	Wind Offshore Block 4	0.295
PAC	H	Wind Offshore Block 4	0.19
SWA	H	Wind Offshore Block 4	0.306
SEA	H	Wind Offshore Block 4	0.162
SEE	H	Wind Offshore Block 4	0.353
IND	H	Wind Offshore Block 4	0.22
CHN	H	Wind Offshore Block 4	0.212
LEV	H	Wind Offshore Block 4	0.289
EAF	H	Wind Offshore Block 4	0.341
SWE	H	Wind Offshore Block 4	0.304
JSK	H	Wind Offshore Block 4	0.332
NAF	H	Wind Offshore Block 4	0.268
CEA	H	Wind Offshore Block 4	0.181
WAF	H	Wind Offshore Block 4	0.41
EAS	H	Wind Offshore Block 4	0.088
EAE	H	Wind Offshore Block 4	0.275
RUS	H	Wind Offshore Block 4	0.343
SAF	H	Wind Offshore Block 4	0.316
GLF	H	Wind Offshore Block 4	0.148
CAS	H	Wind Offshore Block 4	0.334
CEE	H	Wind Offshore Block 4	0.375

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NOE	H	Wind Offshore Block 4	0.328
BRI	H	Wind Offshore Block 4	0.414
USA	H	Wind Offshore Block 4	0.313
CAN	H	Wind Offshore Block 4	0.339
ANZ	H	Wind Offshore Block 4	0.244
SWA	L	PV Plant A Block 5	0.185
SEA	L	PV Plant A Block 5	0.184
IND	L	PV Plant A Block 5	0.182
CHN	L	PV Plant A Block 5	0.195
LEV	L	PV Plant A Block 5	0.21
EAF	L	PV Plant A Block 5	0.179
IRN	L	PV Plant A Block 5	0.205
SWE	L	PV Plant A Block 5	0.199
NAF	L	PV Plant A Block 5	0.205
CEA	L	PV Plant A Block 5	0.199
WAF	L	PV Plant A Block 5	0.179
EAS	L	PV Plant A Block 5	0.168
GLF	L	PV Plant A Block 5	0.2
CAS	L	PV Plant A Block 5	0.213
USA	L	PV Plant A Block 5	0.213
SWA	H	PV Plant A Block 5	0.186
SEA	H	PV Plant A Block 5	0.187
IND	H	PV Plant A Block 5	0.194
CHN	H	PV Plant A Block 5	0.185
LEV	H	PV Plant A Block 5	0.175

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
EAF	H	PV Plant A Block 5	0.205
IRN	H	PV Plant A Block 5	0.181
SWE	H	PV Plant A Block 5	0.168
NAF	H	PV Plant A Block 5	0.176
CEA	H	PV Plant A Block 5	0.183
WAF	H	PV Plant A Block 5	0.201
EAS	H	PV Plant A Block 5	0.208
GLF	H	PV Plant A Block 5	0.19
CAS	H	PV Plant A Block 5	0.181
USA	H	PV Plant A Block 5	0.169
SWA	L	PV Plant B Block 5	0.186
IND	L	PV Plant B Block 5	0.203
CHN	L	PV Plant B Block 5	0.196
LEV	L	PV Plant B Block 5	0.211
EAF	L	PV Plant B Block 5	0.181
IRN	L	PV Plant B Block 5	0.207
NAF	L	PV Plant B Block 5	0.206
CEA	L	PV Plant B Block 5	0.201
WAF	L	PV Plant B Block 5	0.187
EAS	L	PV Plant B Block 5	0.178
GLF	L	PV Plant B Block 5	0.195
CAS	L	PV Plant B Block 5	0.216
USA	L	PV Plant B Block 5	0.216
SWA	H	PV Plant B Block 5	0.187
IND	H	PV Plant B Block 5	0.196

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CHN	H	PV Plant B Block 5	0.194
LEV	H	PV Plant B Block 5	0.186
EAF	H	PV Plant B Block 5	0.204
IRN	H	PV Plant B Block 5	0.182
NAF	H	PV Plant B Block 5	0.179
CEA	H	PV Plant B Block 5	0.182
WAF	H	PV Plant B Block 5	0.201
EAS	H	PV Plant B Block 5	0.212
GLF	H	PV Plant B Block 5	0.198
CAS	H	PV Plant B Block 5	0.18
USA	H	PV Plant B Block 5	0.165
SEA	L	PV Rooftop Block 5	0.183
IND	L	PV Rooftop Block 5	0.18
CHN	L	PV Rooftop Block 5	0.198
LEV	L	PV Rooftop Block 5	0.208
EAF	L	PV Rooftop Block 5	0.18
IRN	L	PV Rooftop Block 5	0.189
SWE	L	PV Rooftop Block 5	0.198
NAF	L	PV Rooftop Block 5	0.201
CEA	L	PV Rooftop Block 5	0.193
WAF	L	PV Rooftop Block 5	0.174
GLF	L	PV Rooftop Block 5	0.185
CAS	L	PV Rooftop Block 5	0.211
USA	L	PV Rooftop Block 5	0.212
SEA	H	PV Rooftop Block 5	0.187

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
IND	H	PV Rooftop Block 5	0.189
CHN	H	PV Rooftop Block 5	0.171
LEV	H	PV Rooftop Block 5	0.178
EAF	H	PV Rooftop Block 5	0.206
IRN	H	PV Rooftop Block 5	0.186
SWE	H	PV Rooftop Block 5	0.168
NAF	H	PV Rooftop Block 5	0.168
CEA	H	PV Rooftop Block 5	0.183
WAF	H	PV Rooftop Block 5	0.204
GLF	H	PV Rooftop Block 5	0.193
CAS	H	PV Rooftop Block 5	0.178
USA	H	PV Rooftop Block 5	0.167
PAC	L	Wind Onshore A Block 5	0.292
SWA	L	Wind Onshore A Block 5	0.381
SEA	L	Wind Onshore A Block 5	0.354
SEE	L	Wind Onshore A Block 5	0.289
IND	L	Wind Onshore A Block 5	0.319
CHN	L	Wind Onshore A Block 5	0.303
LEV	L	Wind Onshore A Block 5	0.386
EAF	L	Wind Onshore A Block 5	0.352
IRN	L	Wind Onshore A Block 5	0.376
SWE	L	Wind Onshore A Block 5	0.242
JSK	L	Wind Onshore A Block 5	0.27
NAF	L	Wind Onshore A Block 5	0.325
CEA	L	Wind Onshore A Block 5	0.302

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
WAF	L	Wind Onshore A Block 5	0.304
EAS	L	Wind Onshore A Block 5	0.337
EAE	L	Wind Onshore A Block 5	0.245
RUS	L	Wind Onshore A Block 5	0.284
SAF	L	Wind Onshore A Block 5	0.338
GLF	L	Wind Onshore A Block 5	0.341
CAS	L	Wind Onshore A Block 5	0.341
CEE	L	Wind Onshore A Block 5	0.25
NOE	L	Wind Onshore A Block 5	0.278
BRI	L	Wind Onshore A Block 5	0.254
USA	L	Wind Onshore A Block 5	0.289
CAN	L	Wind Onshore A Block 5	0.287
ANZ	L	Wind Onshore A Block 5	0.343
PAC	H	Wind Onshore A Block 5	0.395
SWA	H	Wind Onshore A Block 5	0.338
SEA	H	Wind Onshore A Block 5	0.333
SEE	H	Wind Onshore A Block 5	0.332
IND	H	Wind Onshore A Block 5	0.333
CHN	H	Wind Onshore A Block 5	0.369
LEV	H	Wind Onshore A Block 5	0.274
EAF	H	Wind Onshore A Block 5	0.368
IRN	H	Wind Onshore A Block 5	0.268
SWE	H	Wind Onshore A Block 5	0.366
JSK	H	Wind Onshore A Block 5	0.362
NAF	H	Wind Onshore A Block 5	0.324

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CEA	H	Wind Onshore A Block 5	0.417
WAF	H	Wind Onshore A Block 5	0.4
EAS	H	Wind Onshore A Block 5	0.369
EAE	H	Wind Onshore A Block 5	0.306
RUS	H	Wind Onshore A Block 5	0.341
SAF	H	Wind Onshore A Block 5	0.313
GLF	H	Wind Onshore A Block 5	0.307
CAS	H	Wind Onshore A Block 5	0.318
CEE	H	Wind Onshore A Block 5	0.358
NOE	H	Wind Onshore A Block 5	0.363
BRI	H	Wind Onshore A Block 5	0.403
USA	H	Wind Onshore A Block 5	0.34
CAN	H	Wind Onshore A Block 5	0.366
ANZ	H	Wind Onshore A Block 5	0.286
PAC	L	Wind Onshore B Block 5	0.358
SWA	L	Wind Onshore B Block 5	0.345
SEA	L	Wind Onshore B Block 5	0.347
SEE	L	Wind Onshore B Block 5	0.292
IND	L	Wind Onshore B Block 5	0.321
CHN	L	Wind Onshore B Block 5	0.296
LEV	L	Wind Onshore B Block 5	0.367
EAF	L	Wind Onshore B Block 5	0.339
IRN	L	Wind Onshore B Block 5	0.411
SWE	L	Wind Onshore B Block 5	0.3
JSK	L	Wind Onshore B Block 5	0.33

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NAF	L	Wind Onshore B Block 5	0.347
CEA	L	Wind Onshore B Block 5	0.34
WAF	L	Wind Onshore B Block 5	0.317
EAS	L	Wind Onshore B Block 5	0.335
EAE	L	Wind Onshore B Block 5	0.262
RUS	L	Wind Onshore B Block 5	0.283
SAF	L	Wind Onshore B Block 5	0.333
GLF	L	Wind Onshore B Block 5	0.414
CAS	L	Wind Onshore B Block 5	0.338
NOE	L	Wind Onshore B Block 5	0.29
BRI	L	Wind Onshore B Block 5	0.298
USA	L	Wind Onshore B Block 5	0.284
CAN	L	Wind Onshore B Block 5	0.316
ANZ	L	Wind Onshore B Block 5	0.344
PAC	H	Wind Onshore B Block 5	0.289
SWA	H	Wind Onshore B Block 5	0.381
SEA	H	Wind Onshore B Block 5	0.358
SEE	H	Wind Onshore B Block 5	0.345
IND	H	Wind Onshore B Block 5	0.36
CHN	H	Wind Onshore B Block 5	0.373
LEV	H	Wind Onshore B Block 5	0.295
EAF	H	Wind Onshore B Block 5	0.398
IRN	H	Wind Onshore B Block 5	0.239
SWE	H	Wind Onshore B Block 5	0.391
JSK	H	Wind Onshore B Block 5	0.385

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
NAF	H	Wind Onshore B Block 5	0.31
CEA	H	Wind Onshore B Block 5	0.313
WAF	H	Wind Onshore B Block 5	0.389
EAS	H	Wind Onshore B Block 5	0.388
EAE	H	Wind Onshore B Block 5	0.314
RUS	H	Wind Onshore B Block 5	0.352
SAF	H	Wind Onshore B Block 5	0.303
GLF	H	Wind Onshore B Block 5	0.253
CAS	H	Wind Onshore B Block 5	0.328
NOE	H	Wind Onshore B Block 5	0.371
BRI	H	Wind Onshore B Block 5	0.419
USA	H	Wind Onshore B Block 5	0.361
CAN	H	Wind Onshore B Block 5	0.347
ANZ	H	Wind Onshore B Block 5	0.316
PAC	L	Wind Offshore Block 5	0.394
SWA	L	Wind Offshore Block 5	0.425
SEA	L	Wind Offshore Block 5	0.282
SEE	L	Wind Offshore Block 5	0.333
IND	L	Wind Offshore Block 5	0.288
CHN	L	Wind Offshore Block 5	0.128
LEV	L	Wind Offshore Block 5	0.473
EAF	L	Wind Offshore Block 5	0.27
SWE	L	Wind Offshore Block 5	0.166
JSK	L	Wind Offshore Block 5	0.317
NAF	L	Wind Offshore Block 5	0.422

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	**Season**	**Block**	**Availability**
CEA	L	Wind Offshore Block 5	0.316
WAF	L	Wind Offshore Block 5	0.408
EAS	L	Wind Offshore Block 5	0.213
EAE	L	Wind Offshore Block 5	0.259
RUS	L	Wind Offshore Block 5	0.209
SAF	L	Wind Offshore Block 5	0.331
GLF	L	Wind Offshore Block 5	0.356
CAS	L	Wind Offshore Block 5	0.305
CEE	L	Wind Offshore Block 5	0.125
NOE	L	Wind Offshore Block 5	0.237
BRI	L	Wind Offshore Block 5	0.195
USA	L	Wind Offshore Block 5	0.241
CAN	L	Wind Offshore Block 5	0.319
ANZ	L	Wind Offshore Block 5	0.354
PAC	H	Wind Offshore Block 5	0.445
SWA	H	Wind Offshore Block 5	0.428
SEA	H	Wind Offshore Block 5	0.283
SEE	H	Wind Offshore Block 5	0.391
IND	H	Wind Offshore Block 5	0.203
CHN	H	Wind Offshore Block 5	0.208
LEV	H	Wind Offshore Block 5	0.324
EAF	H	Wind Offshore Block 5	0.352
SWE	H	Wind Offshore Block 5	0.243
JSK	H	Wind Offshore Block 5	0.408
NAF	H	Wind Offshore Block 5	0.314

Continued on next page...

Table 27: Renewable Hydrogen Availability Assumptions (continued)

Region	Season	Block	Availability
CEA	H	Wind Offshore Block 5	0.429
WAF	H	Wind Offshore Block 5	0.422
EAS	H	Wind Offshore Block 5	0.256
EAE	H	Wind Offshore Block 5	0.302
RUS	H	Wind Offshore Block 5	0.268
SAF	H	Wind Offshore Block 5	0.392
GLF	H	Wind Offshore Block 5	0.462
CAS	H	Wind Offshore Block 5	0.32
CEE	H	Wind Offshore Block 5	0.171
NOE	H	Wind Offshore Block 5	0.298
BRI	H	Wind Offshore Block 5	0.297
USA	H	Wind Offshore Block 5	0.32
CAN	H	Wind Offshore Block 5	0.381
ANZ	H	Wind Offshore Block 5	0.307

Source: Own depiction. Note: Availability is scaled by electrolyzer efficiency.

4 Nuclear Cost Assumptions

4.1 Investment Cost

Table 28 gives an overview of the assumed investment cost, where η represents electrolyzer efficiency.

4.2 Operation and Maintenance Cost

Table 29 gives an overview of the assumed OM cost, where η represents electrolyzer efficiency.

Table 28: Overview of Nuclear Hydrogen Investment Cost

Category	2020 Nuclear Invest	2020 Electrolysis Invest	2020 Total Invest	2020 Daily Invest	2030 Nuclear Invest	2030 Electrolysis Invest	2030 Total Invest	2030 Daily Invest	2050 Nuclear Invest	2050 Electrolysis Invest	2050 Total Invest	2050 Daily Invest
PAC	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
SWA	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
SEA	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
SEE	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
IND	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
CHN	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
LEV	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
EAF	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
IRN	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
SWE	7 500 000	750 000	9 000 000	375 000	7 500 000	500 000	8 500 000	354 166.6667	7 500 000	200 000	7 900 000	329 166.6667
JSK	7 500 000	750 000	9 000 000	375 000	7 500 000	500 000	8 500 000	354 166.6667	7 500 000	200 000	7 900 000	329 166.6667
NAF	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
CEA	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
WAF	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
EAS	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
EAE	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
RUS	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
SAF	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
GLF	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
CAS	5 500 000	750 000	7 000 000	291 666.6667	5 500 000	500 000	6 500 000	270 833.3333	5 500 000	200 000	5 900 000	245 833.3333
CEE	7 500 000	750 000	9 000 000	375 000	7 500 000	500 000	8 500 000	354 166.6667	7 500 000	200 000	7 900 000	329 166.6667
NOE	7 500 000	750 000	9 000 000	375 000	7 500 000	500 000	8 500 000	354 166.6667	7 500 000	200 000	7 900 000	329 166.6667
BRI	7 500 000	750 000	9 000 000	375 000	7 500 000	500 000	8 500 000	354 166.6667	7 500 000	200 000	7 900 000	329 166.6667
USA	7 500 000	750 000	9 000 000	375 000	7 500 000	500 000	8 500 000	354 166.6667	7 500 000	200 000	7 900 000	329 166.6667
CAN	7 500 000	750 000	9 000 000	375 000	7 500 000	500 000	8 500 000	354 166.6667	7 500 000	200 000	7 900 000	329 166.6667
ANZ	7 500 000	750 000	9 000 000	375 000	7 500 000	500 000	8 500 000	354 166.6667	7 500 000	200 000	7 900 000	329 166.6667

Source: Own depiction. Note: Costs given in M€/TW and M€/TWh/d, decommissioning included in investment costs.

Table 29: Overview of Nuclear Hydrogen Operational Cost

Category	2020 Nuclear OM	2020 Electrolysis OM/year	2020 Capacity Factor	2020 η	2020 Total OM	2030 Nuclear OM/year	2030 Electrolysis OM	2030 Capacity Factor	2030 η	2030 Total OM	2050 Nuclear OM/year	2050 Electrolysis OM	2050 Capacity Factor	2050 η	2050 Total OM
PAC	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
SWA	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
SEA	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
SEE	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
IND	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
CHN	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
LEV	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
EAF	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
IRN	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
SWE	25	30 000	0.90	0.70	41.15	25	20 000	0.90	0.70	39.34	25	8000	0.90	0.70	37.16
JSK	25	30 000	0.90	0.70	41.15	25	20 000	0.90	0.70	39.34	25	8000	0.90	0.70	37.16
NAF	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
CEA	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
WAF	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
EAS	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
EAE	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
RUS	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
SAF	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
GLF	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
CAS	20	30 000	0.90	0.70	34.01	20	20 000	0.90	0.70	32.20	20	8000	0.90	0.70	30.02
CEE	25	30 000	0.90	0.70	41.15	25	20 000	0.90	0.70	39.34	25	8000	0.90	0.70	37.16
NOE	25	30 000	0.90	0.70	41.15	25	20 000	0.90	0.70	39.34	25	8000	0.90	0.70	37.16
BRI	25	30 000	0.90	0.70	41.15	25	20 000	0.90	0.70	39.34	25	8000	0.90	0.70	37.16
USA	25	30 000	0.90	0.70	41.15	25	20 000	0.90	0.70	39.34	25	8000	0.90	0.70	37.16
CAN	25	30 000	0.90	0.70	41.15	25	20 000	0.90	0.70	39.34	25	8000	0.90	0.70	37.16
ANZ	25	30 000	0.90	0.70	41.15	25	20 000	0.90	0.70	39.34	25	8000	0.90	0.70	37.16

Source: Own depiction. Note: All costs are given in M€/TWh, only electrolysis OM cost are given on a yearly basis, i.e. in M€/a/TW.

References

Armijo, Julien, and Cédric Philibert. 2020. "Flexible Production of Green Hydrogen and Ammonia from Variable Solar and Wind Energy: Case Study of Chile and Argentina." *International Journal of Hydrogen Energy* 45 (3): 1541–1558. https://www.sciencedirect.com/science/article/pii/S0360319919342089.

Brändle, Gregor, Max Schönfisch, and Simon Schulte. 2020. *Estimating Long-Term Global Supply Costs for Low-Carbon Hydrogen.* 20/04. Köln: ewi Energy Research and Scenarios gGmbH.

Conference of the Parties. 2023. *Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement.* United Arab Emirates: United Nations Framework Convention on Climate Change.

European Commission. 2023. *Commission Delegated Regulation (EU) 2023/1184 of 10 February 2023 Supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council by Establishing a Union Methodology Setting out Detailed Rules for the Production of Renewable Liquid and Gaseous Transport Fuels of Non-Biological Origin.* https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32023R1184.

Gallardo, Felipe Ignacio, Andrea Monforti Ferrario, Mario Lamagna, Enrico Bocci, Davide Astiaso Garcia, and Tomas E. Baeza-Jeria. 2021. "A Techno-Economic Analysis of Solar Hydrogen Production by Electrolysis in the North of Chile and the Case of Exportation from Atacama Desert to Japan." *International Journal of Hydrogen Energy* 46 (26): 13709–13728. https://www.sciencedirect.com/science/article/pii/S0360319920325842.

Göke, Leonard, Alexander Wimmers, and Christian von Hirschhausen. 2023. "Economics of Nuclear Power in Decarbonized Energy Systems," https://arxiv.org/abs/2302.14515.

IEA. 2019. *The Future of Hydrogen: Seizing Today's Opportunities.* International Energy Agency, 2019. https://www.oecd-ilibrary.org/energy/the-future-of-hydrogen_1e0514c4-en.

———. 2021. *Ammonia Technology Roadmap.* Paris: International Energy Agency.

———. 2022. *World Energy Outlook 2022.* Paris: IEA. https://www.iea.org/reports/world-energy-outlook-2022.

Ikäheimo, Jussi, Juha Kiviluoma, Robert Weiss, and Hannele Holttinen. 2018. "Power-to-Ammonia in Future North European 100 % Renewable Power and Heat System." *International Journal of Hydrogen Energy* 43 (36): 17295–17308. https://www.sciencedirect.com/science/article/pii/S0360319918319931.

IRENA. 2021. *Making the Breakthrough: Green Hydrogen Policies and Technology Costs.* Abu Dhabi: International Renewable Energy Agency.

IRENA. 2023. *Renewable Power Generation Costs in 2022.* IRENA. https://www.irena.org/Publications/2023/Aug/Renewable-Power-Generation-Costs-in-2022.

Lovins, Amory B. 2022. "US Nuclear Power: Status, Prospects, and Climate Implications." *The Electricity Journal* 35 (4): 107122. https://linkinghub.elsevier.com/retrieve/pii/S1040619022000483.

Mattsson, Niclas, Vilhelm Verendel, Fredrik Hedenus, and Lina Reichenberg. 2021. "An Autopilot for Energy Models – Automatic Generation of Renewable Supply Curves, Hourly Capacity Factors and Hourly Synthetic Electricity Demand for Arbitrary World Regions." *Energy Strategy Reviews* 33:100606. https://linkinghub.elsevier.com/retrieve/pii/S2211467X20301590.

Reuß, M., T. Grube, M. Robinius, P. Preuster, P. Wasserscheid, and D. Stolten. 2017. "Seasonal Storage and Alternative Carriers: A Flexible Hydrogen Supply Chain Model." *Applied Energy* 200:290–302. https://www.sciencedirect.com/science/article/pii/S0306261917305457.

Rothwell, Geoffrey. 2022. "Projected Electricity Costs in International Nuclear Power Markets." *Energy Policy* 164:112905. https://linkinghub.elsevier.com/retrieve/pii/S0301421522001306.

USGS. 2023. *Mineral Commodity Summaries 2023.* Reston, Virginia: U.S. Geological Survey. https://pubs.usgs.gov/publication/mcs2023.

Yousefi, Seyed Hamidreza, Remco Groenenberg, Joris Koornneef, Joaquim Juez-Larré, and Mina Shahi. 2023. "Techno-Economic Analysis of Developing an Underground Hydrogen Storage Facility in Depleted Gas Field: A Dutch Case Study." *International Journal of Hydrogen Energy* 48 (74): 28824–28842. https://linkinghub.elsevier.com/retrieve/pii/S0360319923018256.