	Type Flag						
TWh	-1	2010	2015	2020	2025	2030	2035
Coal	1	1847	1581	1656	1680	1766	1807
Natural Gas	1	970	1132	1184	996	1379	1519
Oil	1	37	20	17	18	18	18
Nuclear	1	807	820	885	912	908	875
Hydro	1	257.08	297.18	302.28	306.75	309.15	311.83
Biomass	1	37.61	54.58	91.13	116.24	133.11	145.45
Wind	1	94.95	153.85	154.4	164.84	173.83	194.23
Solar	1	4.48	20.35	23.87	25.44	28.42	43.96
Geothermal	1	15.67	18.68	24.41	31.53	39.89	46.54
Total electrical [2	3955.00	3942.00	4084.00	4265.0	4426.0	4572.00
Vehicle Electrica	2	5.56	8.33	8.33	11.11	16.67	19.44
Petroleum	3	24343.0000	24020.00	24054.000	24080.00	24205.0000	24453.0000
Ethanol	3	2536.0000	2428.00	2407.000	2478.00	2815.0000	3216.0000
Biodiesel	3	41	130	129	133	151	172
CNG	3	40.00	60.0	90.0	110.0	140.0	160.00
Hydrogen	3	0	0	0	0	0	0
Electric	3	20	30	30	40	60	70
Total Transport	4	28463478.0	28134740.0	28178918.8	28316914.3	28876110.4	29615106.6
Coal	5	1719.65	1751.3	1930.65	2078.35	2162.75	2247.15
Natural Gas	5	17386.4	17935	18209.3	18251.5	18188.2	18209.3
Oil	5	10539.45	10117.45	10149.1	10233.5	10191.3	10233.5
Biomass	5	1477.00	1382.00	1466.0	1466.0	1456.0	1614.0
Total Heat Dem	6	32834237.5	32900966.3	33501577.8	33790964.3	33758153.8	34080667.3
Water-Surface	7	0.7	0.7	0.7	0.7	0.7	0.7
Water-Ground	7	0.3	0.3	0.3	0.3	0.3	0.3
Water-Import	7	0	0	0	0	0	0
Water-Desal	7	0	0	0	0	0	0
Total Water Der	8	568670	596199.94851	625062.65252	655322.63219	687047.53121	720308.26794
WW-Trickling	9	0.0167	0.012	0.01	0.005	0.001	0
WW-Aerated	9	0.412	0.4	0.38	0.36	0.35	0.35
WW-Adv-NoDe	9	0.1632	0.1732	0.19	0.2	0.2	0.2
WW-Adv-DeN	9	0.4083	0.42	0.42	0.43	0.44	0.44
Wastewater Der	10	44691	46854.54112	49122.821678	51500.912225	53994.128787	56608.044741

Source Flag	Capacity (MW)	Capacity Factor	Heat Rate Effici	Year complete	Construction Tir Ops Mode)	Plant Mode	Fuel Mode	Interact Flag
0	-326	0.1994	0.326	2012	0	0	C	1	-2
0	-510	0.0783	0.273	2012	0	0	C	0	-2
0	-363	0.1485	0.2501	2012	0	0	C	1	-2
0	-632	0.4137	0.339	2015	0	0	C	0	-2
0	-261	0.4133	0.3376	2015	0	0	C	1	-2
0	-420	0.4198	0.3439	2015	0	0	C	0	-2
0	-354	0.1991	0.3014	2015	0	0	C	1	-2
0	-490.6	0.2511	0.2591	2014	0	0	C	0	-2
0	-50	0.5220	0.215	2011	0	0	C	1	1
0	-420	0.1424	0.2716	2011	0	0	C	1	-2
6	50	0.25	0.97	2012	1	0	C	0	-2
6	48	0.2	0.97	2012	2	0	C	0	-2
6	69	0.25	0.97	2012	2	0	C	0	-2
7	10	0.15	0.97	2012	1	0	C	0	-2
6	161	0.25	0.97	2012	2	0	C	0	-2
6	139	0.2	0.97	2012	2	0	C	0	-2
6	61	0.25	0.97	2012	2	0	C	0	-2
1	560	0.5	0.4	2011	3	0	C	0	0
7	5.5	0.15	0.97	2011	1	0	C	0	-2
4	5	0.5	0.97	2011	2	0	C	0	-2
1	98.5	0.5	0.97	2011	3	0	C	0	-2

For adjusting requirements, particularly for retirements:

-1 is replacement with class default -2 is replacement by spreading requirements across class. Positive is replacement with specific source.

upaated	i retirem	ients Fei	o 9th	WIT
EIA 860	and eGI	RID2012	data	

Notes	Source Flag	Stage Flag	Default option	Option 1	Option 2	Option 3	Option 4	Start Year	End Year
Coal Mining	0	2	0.7	0.3	0	0		2010	2035
Coal plant cooling	0	0	0.1	0.9	0	0		2010	2035
NG Plant cooling	1	0	0.1	0.9	0	0		2010	2035
Nuclear Plant cooling	3	0	0.1	0.9	0	0		2010	2035
Gas drilling	1	2	0.7	0.3	0	0		2010	2035
Reg/Adv/No treatment	19	0	0.2	0.18	0.62	0		2010	2035
Reg/Adv/No treatment	20	0	0.4	0.2	0.4	0		2010	2035
Reg/Adv/No treatment	21	0	0.9	0.1	0	0		0 2010	2035
Reg/Adv/No treatment	22	0	0.9	0.1	0	0		2010	2035
Treatment vs. none	19	1	0.38	0.62	0	0		0 2010	2035
Treatment vs. none	20	1	0.6	0.4	0	0		0 2010	2035
Biodiesel Irrigation	11	2	0.15	0	0.85	0		0 2010	2015
Biodiesel Irrigation	11	2	0.25	0	0.75	0		0 2015	2035
Gas drilling	12	2	0.7	0.3	0	0		0 2010	2035
Gas drilling	16	2	0.7	0.3	0	0		0 2010	2035

	Source Flag	% Fuel sourced from region	Current Regional Percentage of Class from Source	Capacity (MW,	Fleet Capacity Factor	Regional fleet efficiency	Policy Regional Preference	Natural Regional Preference	Ops Mode 1 Prob	Ops Mode 2 Prob	Ops Mode 3 Prob	Mode 4 Prob	Mode 5 Prob	Plant Mode 1 Prob	Plant Mode 2 Prob	Plant Mode 3 Mode 4 P	rob Mode 5 Pro	b Fuel Mode 1 Prob	Fuel Mode 2 Prob	Fuel Mode 3 Prob	Mode 4 Prob	Mode 5 Prob
Coal	0	0.8	0.44	21636	0.5589	0.3472	-	1 1	0.6	0.4	(0	0	1	0	0	0	0 0.7	0.3	() (0 0
Natural Gas	1	0.5	0.15	10875	0.3025	0.4077	-	1 1	0.6	0.4	(0	0	1	0	0	0	0.0	0.2	() (0 0
Oil	2	0.01	0.004622	3679	0.0155	0.2672	-	1 1	0.6	0.4	(0	0	1	0	0	0	0 1	0	() (0 0
Nuclear	3	0	0.33	10015	0.8828	0.3	-	1 1	0.22	0.78	(0	0	1	0	0	0	0 1	0	() (0 0
Hydro	4	1	0.025	3240	0.10912	0.97	-	1.7760276	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Biomass	5	0.95	0.033	717.4	0.5572	0.277	-	1.5872738	0.6	0.4	(0	0	1	0	0	0	0 1	0	() (0 0
Wind	6	1	0.02492	748	0.164	0.97	-	0.979676	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Solar	7	1	0.00008143	73	0.1355	0.97	-	0.5623929	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Geothermal	8	1	C	0.00001	0.30	0.97	-	0.9084462	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Petroleum	9	0.01	0.949	2554000000	1	0.99	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Ethanol	10	0.2	0.0393	305480000	1	0.99	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Biodiesel	11	0.9	0.0121	25570000	1	0.99	-	1 1	1	0	(0	0	1	0	0	0	0 0	0	-	(0 0
CNG	12	0.5	0.00000341	83000000	1	0.92	-	1 1	1	0	(0	0	1	0	0	0	0.0	0.2	() (0 0
Hydrogen	13	0.5	0.000000001	282	1	0.97	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Electric	14	1	0.00000003	8460	0.2	0.99	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Coal	15	0.8	0.189	27563760	1	0.99	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Natural Gas	16	0.5	0.581	84733040	1	0.92	-	1 1	1	0	(0	0	1	0	0	0	0.0	0.2	() (0 0
Oil	17	0.01	0.17	24792800	1	0.99	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Biomass	18	1	0.057	8312880	1	0.97	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Water- Surface	19	1	0.937	1616000	0.87	0.97	-	1	0.2	0.18	0.62	2 0	0	0.38	0.62	0	0	0 0.5	0.4	0.1	(0 0
Water- Ground	20	1	0.163	98500	0.95	0.97	-	1	0.4	0.2	0.4	1 0	0	0.6	0.4	0	0	0 1	0	()	0 0
Water-Import	21	1	C	0.000001	0.9	0.97	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
Water-Desal	22	1	C	0.000001	0.9	0.97	_	1 1	1	0	(0	0	1	0	0	0	0 1	0	(0 0
WW-Trickling	23	1	0.01	20.501	1.08	0.97	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
WW-Aerated	24	1	0.5713	175520.10	0.76	0.97	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
WW-Adv- NoDeN	25	1	0.064	21131.80	0.71	0.97	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0
WW-Adv-DeN	26	1	0.3846	119063.50	0.71	0.97	-	1 1	1	0	(0	0	1	0	0	0	0 1	0	() (0 0

Notes	Source/Class Fl Type Flag		Start Year	End Year	Level (%)
Biomass cap	5	2	2012	2035	0.1
Oil Elimination	2	2	2015		(
Solar 1	7	1	2010		
Solar 2	7	1	2016	2020	0.0025
Solar 3	7	1	2021	2022	0.005
Wind - Type I AES	6	4	2010	2011	0.03
Solar - Type I AES	7	4	2010	2011	0.03
Geothermal - Type I AES	8	4	2010	2011	0.03
Wind - Type I AES	6	4	2011	2012	0.035
Solar - Type I AES	7	4	2011	2012	0.035
Geothermal - Type I AES	8	4	2011	2012	0.035
Wind - Type I AES	6	4	2012	2013	0.04
Solar - Type I AES	7	4	2012	2013	0.04
Geothermal - Type I AES	8	4	2012	2013	0.04
Wind - Type I AES	6	4	2013	2014	0.045
Solar - Type I AES	7	4	2013	2014	0.045
Geothermal - Type I AES	8	4	2013	2014	0.045
Wind - Type I AES	6	4			
Solar - Type I AES	7	4	2014		0.05
Geothermal - Type I AES	8	4			0.05
Wind - Type I AES	6	4	2015		0.055
Solar - Type I AES	7	4			0.055
Geothermal - Type I AES	8	4	2015		
Wind - Type I AES	6	4	2016		
Solar - Type I AES	7	4			
Geothermal - Type I AES	8	4	2016		0.06
Wind - Type I AES	6	4			0.065
Solar - Type I AES	7	4	2017		0.065
Geothermal - Type I AES	8	4	2017	2018	0.065
Wind - Type I AES	6	4			0.003
Solar - Type I AES	7	4			
Geothermal - Type I AES	8	4			
Wind - Type I AES	6	4			
Solar - Type I AES	7	4			
• • • • • • • • • • • • • • • • • • • •	8	4			
Geothermal - Type I AES	6	4			
Wind - Type I AES	7				0.08
Solar - Type I AES		4			0.00
Geothermal - Type I AES	8	4			30.0
Wind - Type I AES	6	4		2022	
Solar - Type I AES	7	4		2022	0.085
Geothermal - Type I AES	8	4		2022	0.085
Hydro - Type II AES	4	4			
Biomass - Type II AES	5	4			
Hydro - Type II AES	4	4			
Biomass - Type II AES	5	4			
Hydro - Type II AES	4	4			0.1
Biomass - Type II AES	5	4	2020	2021	0.

All values EIA AEO 2012, 2010 values Total US Energy consumption: 98.16 quads, 1.036e14 MJ Total US energy used for electricity: 39.63 quads, 4.181e13 MJ Total Energy consumed as electricity: 12.79 quads, 1.349e13 MJ, 3.748e9 MWh Total electricity use: 3,877 billion kWh, 1.396e13 MJ, 13.23 quads

		Distillate Fuel Oil	Jet Fuel b	LPG c	ı	ubricants	Motor Gasoline d	Residual Fuel Oil	Total	Natural Gas a	Retail Electricity Sales	Electrical System Energy Losses e	Net Energy	Total	
	0.5	215.9	70.6	0.8	6	.5	633.9	6.0	934.3	49.5	3.0	6.3	986.9	993.2	
	0.0001279623	0.0552541332	0.0180682807	0.0002047397		0.0016635102625787	0.1622306393	0.0015355479	0.9407914611	0.0498439231	0.0030208438	3			
										0.0501621403					
Biotreatment		0.25			E	Biomass respiration	3,785			· ·	· ·				
Sludge digestion + treatment	1.89	1.46	1.759	1.759	E	3OD oxidation	4,361	4,361	4,515	4,462	4,462	4,62	5		0.5683577878
Sludge disposal	0.167	0.134	0.006	0.006	C	Credit nitrification	-247	-247	-242	-244	-244	-239	9		0.5311295203
Chemicals	0.03		0.206	0.206	1	I2O emissions	1,359	4,432	4,277	1,354	3,905	3,692	2 ;	376 0.7	35 276.36
	2.157	1.844	2.124	2.251	0.455139865296691	otal direct secondary treatment emis	9,258	12,331	12,487	9,398	11,948	12,059	9 !	510 0.44	55 227.205
					0.24664470773315	otal sludge digestion GHG emission	5,017	4,754	4,710	4,923	4,558	4,512	2 4	127 0.41	57 177.5039
					0.100929157858512	otal embedded GHG emissions fron	2,053	2,053	2,053	2,053	2,053	2,05	3	348 0.46	31 161.1588
					0.197286269111646	otal sludge disposal and reuse GHG	4,013	4,013	3,956	4,145	4,145	4,08	1 (626 0.62	39 390.5614
Biotreatment	0.0324524803	0.1355748373	0.0720338983	0.1243891604	0.455139865296691	otal GHG emissions (GHG total)	20,341	22,694	22,920	19,633	22,328	22,51	4 2	225 0.59	73 134.3925
Sludge digestion + treatment	0.876216968	0.7917570499	0.8281544256	0.7814304753	0.24664470773315		0.9851317319	1.0990895002	1.1100348702	0.9508426966	1.0813638125	1.0903719489	9		
Sludge disposal	0.0774223459	0.0726681128	0.0028248588	0.002665482	0.197286269111646		MWh	MJ	State MJ	kg/MJ	US GWP	PA GWP			
Chemicals	0.0139082058	0	0.0969868173	0.0915148823	0.100929157858512	Electricity	3955.00	1.42E+13	7.12E+11	0.25	3,559.5	177.97	5		
					1	ransport		2.85E+10	1.02E+09	0.1	2.8463478	0.1024685208	В		
	factors	Current Reg	2010 Nat	2015 Nat	ŀ	leat		3.28E+10	1.31E+09	0.075	2.4625678125	0.098502712	5		
Hydro	2.552055131	0.0101	0.6273457137	0.5456448296	0.00674315532320804	0.00878465040742415	0.014	0.021	0.016	0.0205073458	0.016	6			
Biomass	2.174547671	0.0103	0.0917787159	0.1002129847	0.0123583139525766	0.0112465480936686	0.014	0.019	0.015	0.019343462	0.015	i			
Wind	0.959352608	0.00806	0.2317040435	0.2824801704	0.00975449097374735	0.00982628588864726	0.011	0.011	0.009	0.0111820644	0.009)			
Solar	0.124785713	0.0000348	0.0109324288	0.0373641304	0.0000452991121350319	0.000118937133030862	0.000	0.000	0.000	0.0000365534	0.000	178.1759712	3		
Geothermal	0.816892361	0	0.0382390981	0.0342978848	0	0	0.000	0.000	0.000	0	0.000				
Transport Fuels	GGE			622e6 M	J NG for heating in PA										
Petroleum		8.75E+11	9.49E-01	Ren Prefs	S F	REn Prefs Adj									
Ethanol		3.62E+10	3.93E-02		2.552055131	1.7760275655		0.008893	0.019)					
Biodiesel		1.12E+10			2.174547671	1.5872738355		0.010271							
CNG	2426	314038.422			0.959352608	0.979676304		0.004896							
Electricity	1	129.447			0.124785713	0.5623928565		0.000016	0.000081						
Hydrogen	0	0	0.00E+00		0.816892361	0.9084461805		0)						
LPG	1807	233910.729													