# 1 Description of the Use Case

## 1.1 Name of Use Case

|  |  |  |
| --- | --- | --- |
| Use Case Identification | | |
| ID | Domain(s) | Name of Use Case |
| C-1.1.1 | Customer, Service Provider | Energy Services Provider Interface |

## 1.2 Version Management

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Version Management | | | | | | |
| Version Management Changes / Version | Date | Name Author(s) or Committee | Domain Expert | Area of Expertise / Domain / Role | Title | Approval Status  draft, for comments, for voting, final |
| 1.0 | 2011-11-01T09:30:47Z | ESPI | Marty Burns | Technical Champion, SGIP PAP20 | Energy Services Provider Interface | final |

## 1.3 Scope and Objectives of Use Case

|  |  |
| --- | --- |
| Scope and Objectives of Use Case | |
| Related business case | Demand side management feedback to customer |
| Scope | Exchange of Energy Usage Information from Data Custodian (utility enterprise customer information system) and a Third Party service provider. |
| Objective | Provide a standard interface for the automated exchange of Energy Usage Information between a Retail Customer, a Data Custodian, and a Third Party service provider. |

## 1.4 Narrative of Use Case

|  |
| --- |
| Narrative of Use Case |
| Short description – max 3 sentences |
| The purpose of the Energy Services Provider Interface (ESPI) is to provide a consistent and broadly applicable interface to enable Retail Customer authorization of exchange of Energy Usage Information (EUI) from Data Custodians to Third Parties. It is anticipated that Third Parties will desire to offer Retail Customers raw and/or enriched analysis of EUI. EUI is expected to reside with a Data Custodian. It is desired that the Third Party can provide this service only through the request or direction of the Retail Customer and in coordination with the Data Custodian. ESPI describes the mechanisms by which this orchestrated exchange may be enabled. Note that the decision to implement ESPI should be applied within the context of existing policies, practices and the requirements of the Applicable Regulatory Authority. |
| Complete description |
| The purpose of Energy Services Provider Interface (ESPI) is to provide a consistent and broadly applicable interface to enable Retail Customer authorization of exchange of Energy Usage Information (EUI) from Data Custodians to Third Parties. It is anticipated that Third Parties will desire to offer Retail Customers raw and/or enriched analysis of EUI. EUI is expected to reside with a Data Custodian. It is desired that the Third Party can provide this service only through the request or direction of the Retail Customer and in coordination with the Data Custodian. ESPI describes the mechanisms by which this orchestrated exchange may be enabled.    The figure above illustrates the basic setup. The Retail Customer via a web portal, typically, establishes the relationship between himself, and, the Data Custodian and the Third Party. Once this relationship is established, automated data exchange occurs between the Data Custodian and the Third Party. Typically the Data Custodian is an energy utility. However, this is not required.  ESPI provides for the automated exchange of EUI via a set of defined data structures and 12 sub-Use Case exchange scenarios. The following figure illustrates them. It shows that these exchanges include the establishment, maintenance, and taking down of relationships for data exchange; additionally and most importantly they support the automated exchange of data via asynchronous, synchronous, push and pull, methods. |

## 1.5 General Remarks

|  |
| --- |
| General Remarks |
| ESPI is the basis of the Green Button Initiative in the US. It is a rapidly penetrating technology that is inspiring an ecosystem of services built around the sourcing an sinking of EUI. |

# 2 Diagrams of Use Case

|  |
| --- |
| Diagram of Use Case |
|  |

# 3 Technical Details

## 3.1 Actors: People, Systems, Applications, Databases, the Power System, and Other Stakeholders

|  |  |  |  |
| --- | --- | --- | --- |
| Actors | | | |
| Grouping (Community) | | Group Description | |
| Customers | | This is the customer domain | |
| Actor Name  see Actor List | Actor Type  see Actor List | Actor Description  see Actor List | Further information specific to this Use Case |
| Customer | Person | An entity that pays for electrical goods or services. A customer of a utility, including customers who provide more power than they consume. This customer may also be an entity (e.g. department, tenant) within a larger building. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Actors | | | |
| Grouping (Community) | | Group Description | |
| Service Provider | |  | |
| Actor Name  see Actor List | Actor Type  see Actor List | Actor Description  see Actor List | Further information specific to this Use Case |
| Third Party | Application | Any entity that has authorization to provide services (such as managed energy services, demand/response) or an exchange information with customers and their systems. This pertains to Service Providers, and aggregators, Utilities use 3rd parties information systems for outsourced operations, weather and major events relevant to utility operations. |  |
| Data Custodian | Application | Entity that has the energy usage information and can serve it up to the third party or the customer directly. |  |

## 3.2 Preconditions, Assumptions, Post condition, Events

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case Conditions | | | |
| Actor/System/Information/Contract | Triggering Event | Pre-conditions | Assumption |
| Customer | Wants the benefit of Third Party services | Has established account with Third Party. Has account with Energy Service Provider |  |

## 3.3 References / Issues

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| References | | | | | | |
| No. | References Type | Reference | Status | Impact on Use Case | Originator / Organisation | Link |
| 1 | Standard | NAESB REQ.21 Energy Services Provider Interface | Standard | Basis | NAESB | www.naesb.org |

## 3.4 Further Information to the Use Case for Classification / Mapping

|  |
| --- |
| Classification Information |
| Relation to Other Use Cases |
| none |
| Level of Depth |
| Detailed |
| Prioritisation |
| High |
| Generic, Regional or National Relation |
| National |
| View |
| Technical |
| Further Keywords for Classification |
| ESPI, Green Button, PAP10, PAP20 |

# 4 Step by Step Analysis of Use Case

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Scenario Conditions | | | | | |
| No. | Scenario Name | Primary Actor | Triggering Event | Pre-Condition | Post-Condition |
| 4.1 | Authorized Third Party Establishes Relationship with Data Custodian | Third Party | The Authorized Third Party wishes to provide value added services to Retail Customers with EUI stored by the Data Custodian. | Authorized Third Party had demonstrated that it meets eligibility, security and privacy requirements. | A Shared Identity Key is generated to allow the Authorized Third Party to identify its identity to Data Custodian.  The Authorized Third Party has permission to get specified EUI from the Data Custodian with permission of a Retail Customer. |
| 4.2 | Retail Customer Authorizes Authorized Third Party Resources Access via Data Custodian | Customer | A Retail Customer wants to grant permission for a Data Custodian to share a particular EUI resource with an Authorized Third Party. The Retail Customer initiates the process through the Data Custodian. | Retail Customer has established accounts with Data Custodian and Authorized Third Party.  Authorized Third Party has an established account with Data Custodian.  Data Custodian and Authorized Third Party have published and made Retail Customer aware of their privacy policy related to collection and handling of customer information. | A Shared Resource Key is generated to allow all three roles to refer to the same shared resource. This key is known to all three roles.  The Authorized Third Party has the Retail Customer's permission to get the specified EUI from the Data Custodian.  The Data Custodian sends the Retail Customer confirmation of establishment of the Authorized Third Party EUI access relationship.  Authorized Third Party and Data Custodian persist the Authorization, associating it with its identity of the Retail Customer. |

## 4.1 Steps – Authorized Third Party Establishes Relationship with Data Custodian

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scenario | | | | | | | | |
| Scenario Name : | | Authorized Third Party Establishes Relationship with Data Custodian | | | | | | |
| Step No. | Event | Name of Process/ Activity | Description of Process/ Activity | Service | Information Producer (Actor) | Information Receiver (Actor) | Information Exchanged | Requirements , R-ID |
| 1 | Desire to establish Third Party relationship with Data Custodian | Create Third Party ID | Authorized Third Party requests that the Data Custodian establish relationship | CREATE | Third Party | Data Custodian | ApplicationInformation |  |
| 2 |  | REPLY | REPLY | REPLY | Data Custodian | Third Party | ThirdPartyID |  |
| 3 | Desire to check status | Read Service Status | Third Party checks their ability to connect to the service, and obtains the current status of the service | GET | Third Party | Data Custodian | ServiceStatus |  |

## 4.2 Steps – Retail Customer Authorizes Authorized Third Party Resources Access via Data Custodian

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scenario | | | | | | | | |
| Scenario Name : | | Retail Customer Authorizes Authorized Third Party Resources Access via Data Custodian | | | | | | |
| Step No. | Event | Name of Process/ Activity | Description of Process/ Activity | Service | Information Producer (Actor) | Information Receiver (Actor) | Information Exchanged | Requirements , R-ID |
| 1 | The Retail Customer decides to grant permission for the Data Custodian to share his EUI with the Authorized Third Party | Read Data Custodian List | Retail Customer finds his appropriate Data Custodian from Authorized Third Party, and navigates to the appropriate place to begin establishment of sharing relationship. | GET | Customer | Third Party | RetailCustomerID |  |
| 2 |  | REPLY | REPLY | REPLY | Third Party | Customer | DataCustodianList |  |
| 3 |  | Create Data List | Retail Customer requests that the Data Custodian establish a new EUI access relationship. | GET | Customer | Data Custodian | RetailCustomerID |  |
| 4 |  | REPLY | REPLY | REPLY | Data Custodian | Customer | DataList |  |
| 5 |  | CreateAuthorization | Retail Customer selects a resource to share, sets any available attributes for the relationship, and specifies an Authorized Third Party. Selecting these parameters and completing the interaction indicates permission for the Data Custodian to grant the specified Authorized Third Party access to the specified shared resource. | CREATE | Customer | Data Custodian | DataResource |  |
| 6 |  | REPLY | REPLY | REPLY | Data Custodian | Customer | Success |  |
| 7 |  | Create Request Token | Data Custodian generates a Shared Resource Key (Request Token) to begin creation of this relationship and provides it to the Authorized Third Party. Each Shared Resource Key is unique to the relationship between a Retail Customer, Data Custodian, Authorized Third Party, and specific EUI. | CREATE | Third Party | Data Custodian | Authorization |  |
| 8 |  | REPLY | REPLY | REPLY | Data Custodian | Third Party | RequestToken |  |
| 9 |  | Request Authorization | Authorized Third Party requests authorization of the token by the Retail Customer, via the Data Custodian. | GET | Third Party | Customer | Authorization |  |
| 10 |  | REPLY | REPLY | REPLY | Customer | Third Party | Success |  |
| 11 |  | Authorize | Retail Customer authenticates with Data Custodian. | EXECUTE | Customer | Data Custodian | Authorization |  |
| 12 |  | REPLY | REPLY | REPLY | Data Custodian | Customer | Authorization |  |
| 13 |  | Provide Authorization | Customer the authorizes the Third Party and provides Request Token and authorization info. | EXECUTE | Customer | Third Party | Authorization |  |
| 14 |  | REPLY | REPLY | REPLY | Third Party | Customer | Success |  |
| 15 |  | Create Access Token | Authorized Third Party exchanges the authorized Request Token for an Access Token from the Data Custodian. | GET | Third Party | Data Custodian | Authorization |  |
| 16 |  | REPLY | REPLY | REPLY | Data Custodian | Third Party | AccessToken |  |

# 5 Information Exchanged

|  |  |  |
| --- | --- | --- |
| Information Exchanged | | |
| Name of Information Exchanged | Description of Information Exchanged | Requirements to information data  R-ID |
| ApplicationInformation | Includes (non-standardized) information about the Authorized Third Party Application requesting access to the DataCustodian services. Information requested may include items such as Organization Name, Website, Contact Info, Application Name, Description, Icon, Type, default Notification and Callback endpoints, and may also include agreement with terms of service. |  |
| ThirdPartyID | An identifier for the Authorized Third Party. |  |
| ServiceStatus | Contains the current status of the service.  0 = Unavailable  1 = Normal, operational |  |
| RetailCustomerID | An identifier for the Retail Customer. |  |
| DataList | List of Resources available from Data Custodian. |  |
| DataCustodianList | List of Data Custodian IDs supported by Third Party. |  |
| Authorization | Description of an authorization. Includes the information constraining and defining access to the EUI. May include additional security elements, such as signature, timestamp, nonce, etc. as well as callback to allow redirection of the user agent. |  |
| Success | Response that the service completed successfully. |  |
| DataResource | Any resource to be exchanged. |  |
| RequestToken | A key associated with a secret used for securing exchanges. |  |
| AccessToken | AccessToken is a shared key representing the relationship between a RetailCustomer, DataCustodian, and Authorized ThirdParty for particular data resource. |  |

# 6 Common Terms and Definitions

|  |  |
| --- | --- |
| Common Terms and Definitions | |
| Term | Definition |
| Green Button | The ability to retrieve standardized Energy Usage Information from an organization that holds that information (i.e. utility). |