Business Requirements

Project Name: Settlements Data API

Project Number: PR20070143

Department: IT Applications / IT COS

Product/Process: Settlements Data

Prepared By

Document Owner(s)	Project/Organization Role
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Version Control

Version	Date	Author	Change Description
1.0	06/08/2009	Gerald Williams	Created Initial Document
1.1	7/8/2009	Gerald Williams	Incorporated SPP Staff comments/corrections
1.2	7/10/2009	Gerald Williams	Incorporated SPP Staff comments/corrections
2.0	7/22/2009	Gerald Williams	Incorporated updates after review with PRR131 Requirements Committee
3.0	8/17/09	Gerald Williams	Incorporated clarification after discussion with Xcel Energy staff
3.1	8/31/09	Gerald Williams	Additional Clarification added to Section 3.3, requirement A3.0
3.2	9/8/09	Gerald Williams	Added clarification to requirement D13.0 and added Priority to Security requirements per Approval Meeting with PRR131 Committee
3.3	1/19/10	Dawn-Marie Coggins	Change Control 001: Adding clarification about PRR201 modifying PRR101.

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1. Document Information

1.1 References and Contacts

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1.2 Terms and Acronyms

Term / Acronym	Definition
API	**A**pplication **P**rogramming **I**nterface – a set of routines, data structures, object classes and/or protocols provided by libraries and/or operating system services in order to support the building of applications. *(Definition pulled from http://en.wikipedia.org/wiki/API)*
COS	**C**ommercial **O**perations **S**ystem – a suite of applications developed by Accenture for SPP to support the EIS Market. COS applications consist of Siebel and Portal.
EIS	**E**nergy **I**mbalance **S**ervice Market provides asset owners the infrastructure necessary to offer their resources into the marketplace for use in providing Energy Imbalance.
ETS	**e**-**t**erra**s**ettlement – Settlement system for market and transmission settlements developed by AREVA.
LIP	**L**ocational **I**mbalance **P**ricing
MOS	**M**arket **O**perating **S**ystem – developed and maintained by AREVA for SPP.
MWG	**M**arket **W**orking **G**roup is responsible for the identifying and coordinating changes necessary to support any SPP administered market(s), including energy, congestion management and market monitoring consistent with direction from Board of Directors including FERC Order 2000.
Portal	Web-based interface developed by Accenture to enable transfer of data between Market Participants and SPP. Market Participants use the portal to submit offer curves, meter data, etc. SPP Settlements Team uses the portal to post nodal prices, settlement statements, and other reports.
Shadow Settlements	Market Participant process used to validate SPP's energy imbalance statements by pulling inputs from various systems and applying the calculations required to arrive at the expected charges.
SPP Loss Matrix	File produced by SPP Engineering department. Loss Matrix percentages are calculated to show composite loss factors for each possible source/sink transaction. They are used to determine a pro-rata share compensated to each transmission owner for losses.
TSIN	**T**ransmission **S**ystem **I**nformation **N**etworks. This is a location where entities register with NERC. Company and asset registration information can be found at www.tsin.com.
XML	E**x**tensible **M**arkup **L**anguage – markup language for documents containing structured information. This is the format used for a significant amount of SPP market data.

2. Introduction

2.1 Business Reason for Project

Through the Protocol Revision Request (PRR) process, Market Participants have requested an Application Programming Interface (API) for the retrieval of billing determinants. Specifically, PRRs 074 and 131 were submitted requesting the billing determinants/static data required for shadow settlements be provided in the form of a programmatic interface. Also, the need exists for archival of such data with the ability to retrieve data which has been archived. The goal of this project is to facilitate automation of shadow settlements for market participants by providing necessary data in a programmatically accessible manner.

2.2 Customers/Users

The primary users for this API will be SPP Market Participants. In addition, SPP Settlements staff may use the API for settlements investigation or additional shadow settling.

- Market Participants
  - Generation Companies
  - Load Serving Entities
  - Metering Agents
- SPP Market / Transmission Settlements Team
- SPP Corporate Accounting Team

2.3 Project Description

The main objective of this project is to assist Market Participants with automation of shadow settlements by providing necessary data – listed in section 3.2 of this document – in a programmatically accessible manner.

2.4 Project Scope

This project will deliver a solution which provides the necessary architecture to support data requests from market participants. It will additionally support the specific ability to request Settlement Data (billing determinants). The solution will be delivered in phases and will support the logical grouping of data.

Phase I: Replacement of current WebData push with API architecture. Data available in this phase will be the same data currently available via WebData push, i.e. Near Real Time Schedule Data for Control Area, Near Real Time Schedule Data for Transmission Customer, Daily Settlements Summary for Transmission Customer, etc.

Phase II: API architecture will support requests for remaining data outlined in Section 3.2 of this document.

Four current SPP (PRPC) projects will be terminated and included in the scope of this project since the requirements overlap. The following will be included in the scope of this project:

PR20070116 – Add Two New Views to the RTOSS COS Subscription Service
PR20070146 – Schedule Push: Loss Locations
PR20080018 – Increase RTOSS Schedule Availability to Webdata Transfer
PR20080028 – Query for LIP at Settlement Location Level (PRR101)
(Change Control 001): PRR201 was drafted as a modification of PRR101. Thus, the requirements for PRR201 are covered by this project.

In the event of scope change, this document will be updated through the change control process to reflect the changes agreed upon by the PRR131 Requirements Committee and SPP staff.

3. Business Requirements

3.1 Business Process Requirements & Impacts

This project impacts the following SPP business groups, working groups and task forces.

Organization	Impact To and Participation of Organization
Compliance /Regulatory	• Verify no compliance/regulatory impact.
Database & Data Warehouse Administration	• Participation on project team to define and deliver database requirements.
IT Applications – Business Analysts	• Participate on project team to identify and deliver business requirements
IT Applications – Development	• Dedicated resources to identify and deliver project/API requirements
IT Applications – Support	• Dedicated resources to support solution.
IT Applications - Test Team	• Participate on project team to identify and deliver testing requirements • Assist with testing
IT Network/Telecom & Security	• Participate on project team to define and deliver network and security requirements
IT Server Administration	• Participate on project to define and deliver server requirements
Project Management Office	• Provide dedicated Project Management resource throughout duration of project
SPP Settlements Staff	• Participate on project as Siebel business owner • Assist with testing
SPP Market Participants (PRR131 Requirements Committee)	• Participate in development and documentation of project requirements • Participate in member/customer testing phase of the project • Ensure Customer/Member Impact requirements are met
SPP Market Participants' Vendors	• Support MPs' development of interface for API communication
Change Working Group (CWG)	• Coordinate and schedule implementation • Assist in communicating with SPP Members/ Market Participants

3.2 Data Requirements

The following data elements are to be addressed by this project. Detailed data points for each requirement in this section are available at Settlement Data API – Data Details v5.1.

Req. ID	Data Requirement Description	Priority	Notes/Issues
D1.0	Near Real-Time Schedule Data for Control Area	M	WebData Schedule Information System - Subscription Services
D2.0	Near Real-Time Schedule Data for Transmission Customer	H	WebData Schedule Information System - Subscription Services
D3.0	Daily Settlements Summary for Transmission Customer	H	WebData Schedule Information System - Subscription Services; Data is used to validate shadow settlements
D4.0	Calibration Billing Determinants for Settlement Area (SA)	H	Market Protocols -- Section 11.4.1.4
D5.0	Energy Imbalance Settlement Inputs	H	Settlement Statement Summary XML Description
D6.0	Commercial Model Data (NERC Translation Table, include sink location flag)	H	Problems with data currently posted as CSVs on web
D7.0	LIP Data (posted by Settlement Location & Pricing Node and using same format)	H	Desire data in common format
D8.0	SLIP Data (posted by Settlement Location & Pricing Node and using same format)	H	Desire data in common format
D9.0	Loss Matrix Data	M	Currently only available via pricing file on transmission site, prefer API to allow streamlining
D10.0	Transmission Owner TPF Matrix Data		
D11.0	Meter Data	H	Refers to the data actually used on Settlement statement
D12.0	Rate Data	H	
D13.0	Transmission data -OASIS Reservations -Schedule 1 Rates -Schedule 1a Rate -Schedule 2 Rates -Schedule 7 Rates -Schedule 8 Rates -Schedule 11 Rates -Schedule 12 Rates -Discount Policy -Least Cost Interconnects -Prior Year Monthly Coincident Peak Avg MWs-Sched 9-Sched 11-Monthly Assessments -Rolling 12 Month Coincident Peak Avg Ws Sched 9 WR zone only -Prior YEar Monthly Coincident Peak Avg MWs Sched 11-Resident Load -Current Month Coincident Peak MWs -Current Month Energy for Load MWhs Sched 12	H	Data is currently not available at all. *(9/8/09 – Added comment per Requirements Committee)* – The intent is to capture all information related to the oasis reservation (all possible dollar amounts, rates, etc.)

	-Transmission Owner TPF Matrix -SPP Tariff-Attachment H-Addendum 1 to Sched 1-Addendum 1 to Sched 11		
D14.0	New views/data points for Settlements	H	
D15.0	RSS Event Data	H	Data currently not available via WebData push

3.3 Availability Requirements

Req. ID	Availability / Timing Requirement Description	Priority	Notes/Issues
A1.0	Data should be available at a specific time each day so that customers can schedule an automatic process to pick up this data.	H	Very important
A2.0	Data should be available for a minimum of 60 days or some period long enough to cover final settlement.	H	Updates/changes to data would mean data would be corrected to allow validation
A3.0	Data availability should be same as current availability	H	Operating Day for some data points, Operating Day +4 for others, etc.
A4.0	Must meet all integrated and non-integrated data feeds requirements and near real-time data push requirements	H	Capture filters applied to schedule data to verify what is MOS data and what is schedule push; can be a reliability problem and this would allow troubleshooting ACE points
A5.0	Cache real-time data for speedy access	M	Willing to wait for archived data but need real-time quickly.
A6.0	Production Data should be available	H	
A7.0	ITE Data should be available	M	

3.4 Storage/Archiving Data Requirements

Req. ID	Storage / Archiving Data Requirements	Priority	Notes/Issues
S1.0	Historical / Archived data should be available	L	Low priority ok as long as there is a defined procedure for how an MP can get archived data
S2.0	Archiving categories should be set to cover different types of data (real-time, archived, after the fact, etc.)	L	Take weekends and holidays into consideration when determining timing of availability. (14 days?)
S3.0	Zip file per MP w/ archived data, upon archival	L	Data request or File share
S4.0	Archived data must be stored longer than 90 days	L	May not be needed via API but should be available upon request.
S5.0	Ability to get a file dump after resettlement deadline	L	Desire to have back data availability

3.5 Miscellaneous Requirements

Req. ID	Miscellaneous Requirements Description	Priority	Notes/Issues
M1.0	Daily summary query should include current day or previous day (schedules) based on operating day or update date/time for BA check out purposes.	H	Important because use this data as preliminary estimate for clients
M2.0	Desire an instantaneous push of schedule when curtailment occurs.	H	Should not have to 'Pull' every minute to determine when a curtailment occurs.
M3.0	Include flag or label to identify cause of curtailment (IDC or CAT)	H	
M4.0	Audit trail and comments from RTO_SS returned in query	M	Separate query to retrieve comments on a schedule
M5.0	Real-time availability (via push) with the ability to query for other data or missing data.	H	
M6.0	Ability to handle high traffic as customers may query every minute.	H	
M7.0	Customers will only be able to access data they are already authorized to view.	H	
M8.0	Expect HTTP 1.1 protocols, using XML documents and encrypted SSL	H	
M9.0	One location (URL) to request all data (real-time or archived) with load balancing in place for traffic/response purposes; alternatively could use multiple listeners and cycle through them until response is received.	H	
M10.0	MOS View of data versus Schedule view of data	H	Related to A4.0; desire to be able to request MOS data separately from schedule data but receive data in same format for easy comparison; consider use of ID field to join the data

3.6 Disaster Recovery Requirements

Req. ID	Disaster Recovery Requirements Description	Priority	Notes/Issues
DR1.0	There will be no standby database maintained		
DR2.0	Database will be restored from last full backup		

3.7 Security Requirements

Req. ID	Security Requirements Description	Priority	Notes/Issues
Q1.0	API users will follow the existing digital certificate proof of identity	H	Certificates are verified *(9/8/09 – Added priority Requirements Committee)*
Q2.0	API users will only be able to request/ retrieve data they are authorized	H	*(9/8/09 – Added priority Requirements Committee)*
Q3.0	Import existing users from MOS using same MOS API certificate if possible	H	*(9/8/09 – Added priority Requirements Committee)*

3.8 Documentation Requirements

Req. ID	Documentation Requirements Description	Priority	Notes/Issues
R1.0	Technical Design document		
R2.0	XML Specifications		
R3.0	API Specifications		
R4.0	User Guide		
R5.0	Test Plan with Scripts		
R6.0	CWG Member Impacting Project Document		

4. Testing Scope

The scope of testing stipulates the following:

- Business Requirements are complete and signed off by business owners.
- Testing environment shall be controlled by the test lead, including all patches, design changes and migrations.
- Test Lead will coordinate with other projects using the environments to resolve any environmental conflicts.
- Test Lead will receive SPP MPs' approval on delivery (acceptance) of the Settlements Data API.
- SPP resources with business and application experience will be available during the testing period.
- The Test Plan, once published, will be adhered to from a resource and environment perspective.
- Appropriate environments for testing will be established.
- Test scripts providing traceability to requirements will be executed.
- Incidents will be tracked on the SharePoint Settlement Data API team site under Issues Tracking; if deemed an issue, then the designated SPP staff will initiate an incident.
- Market Participant and Participant Vendor testing.

The following table describes the types of tests to be executed for this project and which team is responsible for the test:

Testing Type	Description	Testing Participants	Required	Environment
Unit/Assembly Testing	Individual units of source code or configurations are validated to make sure they are working properly.	• Developer	Y	Development
Integration Testing (ITE)	Testing is conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements.	• SPP MPs	Y	ITE
Performance	Testing to ensure the system meets required performance.	• SPP IT	Y	ITE
Customer	Acceptance – (ex:	• SPP MPs	Y	ITE

	Market Trials) Business Process Owner tests/reviews changes	• SPP IT		
Parallel Operations	POPS is designed to test 24x7 operations, with the continuous updates of realistic data in parallel with existing business functions.	• SPP IT • SPP MPs	Y	ITE and PRD

5. Training Scope

5.1 Internal

- Support Document
- XML/Interface Specifications Document

5.2 External

- Users' Guide
- WebEx Training

6. Completion Criteria

The project will be considered complete when the following activities have been accomplished:

- SPP has available the technology environments (e.g. Hardware, Software, Licenses) and knowledge of systems and code necessary to support the Settlements Data API.
- All changes have been migrated through the software control process into the production environment.
- There are no Critical and/or High errors identified from the testing cycles outstanding.
- SPP Market Participants' Vendor changes completed and tested.
- SPP Market Participants have signed off on delivery (acceptance) of the Settlements Data API.

7. Communications Plan

The communication plan stipulates the following:

- Project Manager or Representative will provide a monthly project summary via posting to CWG site.
- Project Manager or Representative will provide ad hoc reporting to Executive Sponsor.
- Project Manager or Representative will provide ad hoc reporting to SPP Market Participants via CWG email exploder.
- Project Manager will conduct weekly status meeting with project team (Internal SPP).

8. Assumptions

- The project scope will not change unless directed by the Executive Sponsor, Business Owner, or Market Participants and there is a business justification for the change. Impacts will be quantified.
- If changes or additions to the plan are required, sufficient resources will be provided to complete this work. Otherwise, the time frame will change, or some functionality will be removed.
- All project personnel assigned will meet their deliverable commitments.
- Technical Design documentation will be provided to Market Participants and their respective Vendors in a timely manner in an effort to facilitate effective coordination of system changes.
- Project timeline will be reviewed and updated with input from PRR131 Requirements Committee and Project Team as applicable.
- Knowledgeable personnel / Subject Matter Experts will be made available to accomplish these deliverables within the specified time frame.
- Change control and project management control (i.e., scope changes) processes will be followed during the project.
- The testing environment will be provided in a timely manner to perform necessary tests.
- Appropriate tools and training will be provided to the project team.
- Protocol language changes requested in the PRR are accepted and Protocols updated to reflect the accepted changes.
- As the API is delivered and participants verify functionality, the current method of receiving this data (i.e., WebData Subscription) will be discontinued and no longer supported by SPP.
- Timing of data availability will not be compromised. Data will be available with same regularity and frequency as currently available.

9. Risks

#	Risk	Mitigation Steps
1	Due to resource constraints, SPP staff is not able to adequately support the initiative.	Project team agrees on plan, tasks, and timeline
2	Market Participants cannot agree on how this API should be implemented	PM consults CWG for assistance with resolution
3	Conflicting Projects (Data Warehouse, Future Markets, etc.)	PM coordinates through PMO to alleviate environmental collisions
4	Level of scoping required in order to be able to deliver a first release in a reasonable amount of time may result in less than desirable level of data availability for the first release.	PRR131 Requirements Committee chooses the most appropriate approach for implementation

10. Approvals

Approved by:

Executive Sponsor	Date
Business Process Owner	Date
Technical Lead	Date
Training Lead	Date
APPROVED via Conference Call	**9/8/09**
PRR131 Requirements Committee	Date