



**Southwest Power Pool**  
**FINANCE COMMITTEE MEETING**  
**September 26, 2017**  
**Dallas, TX**

**• M I N U T E S •**

**Administrative Items**

Chair Larry Altenbaumer called the meeting to order at 8:30 a.m. The following members of the Finance Committee participated:

Larry Altenbaumer	SPP Director
Bruce Scherr	SPP Director
Kelly Harrison	Westar Energy
Laura Kapustka	Lincoln Electric
Mike Wise	Golden Spread Electric Cooperative
Sandra Bennett	AEP
Tom Dunn	SPP
Others attending included:	
Traci Bender	NPPD
Jerry Peace	OG&E
Greg McAuley	OG&E
Rob Janssen	Dogwood Energy
Denise Buffington	KCPL
Jim Jacoby	AEP
Mike Risan	Basin Electric
Tom Hestermann	Sunflower
Jason Chaplin	Oklahoma Corporation Commission
Geoffrey Rush	Oklahoma Corporation Commission
Les Evans	Kansas Electric Power Coop
Bill Grant	Xcel/SPS
Dennis Florum	Lincoln Electric
Jake Langthorn (phone)	OG&E
Mark Crisson	SPP Director
Harry Skilton	SPP Director
Phyllis Bernard	SPP Director
Graham Edwards	SPP Director
Jim Eckelberger	SPP Director
Nick Brown	SPP
Carl Monroe	SPP
Barbara Sugg	SPP
Michael Desselle	SPP
Paul Suskie	SPP

Minutes from the June 13 and 14, 2017 meeting were reviewed. Bruce Scherr motioned to approve the minutes. The motion was seconded by Kelly Harrison and approved by unanimous voice vote.

**SPP 2018 Operating Plan**

The morning portion of the meeting was dedicated to discussion of the 2018 operating plan with members of the Finance Committee and SPP's Strategic Planning Committee. The goal is to determine if the operating plan is in alignment with the 2014 SPP Strategic Plan.

Points of discussion included:

- Formalize execution plans for strategic initiatives.
- Noting that there are no Operating Plan items related to the Value Pricing strategic initiative and that it is an A priority, Need plan to address value pricing
- Formalize data deletion policy and procedures

- How will SPP compensate generation that is necessary for reliability but may not be economically dispatched
- Need to get ahead of ancillary service impacts caused by growth in variable generation within SPP
- Ensure membership is fully informed to provide SPP staff with appropriate guidance on capital allocation and spending.

Following discussion, Graham Edwards made a motion on behalf of the Strategic Planning Committee to accept the 2018 Operating Plan, as presented, as the basis for the 2018 SPP budget and determined that the operating plan is aligned with the revised 2014 Strategic Plan initiatives. The motion was seconded by Mike Risan and approved by a unanimous voice vote of the members of the Strategic Planning Committee.

Bruce Scherr made a motion to accept the 2018 Operating Plan, as presented, as the basis for the 2018 SPP budget and determined that the operating plan is aligned with the 2014 Strategic Plan. The motion was seconded by Sandra Bennett and approved by a unanimous voice vote of the members of the Finance Committee.

### **Administrative Fee Billing Unit Change**

SPP staff advised the Committee of its activities related to the proposed change in administrative fee billing units and proposed the following steps to move forward:

1. Broaden review to include annual membership fees, withdrawal fees, and any other recovery process currently in place. Objective is to address new questions raised by SPP's Corporate Governance Committee regarding appropriateness of SPP's existing stakeholder process should more stakeholders be required to pay for SPP's services
2. Continue one-on-one discussions with members and customers to solicit input into the change and identify hurdles that will need to be overcome
3. Develop timeline and milestones to implement change

### **2018 Financing Plan**

SPP staff advised the Committee of the results of its request for proposal process to put in place a financing arrangement which will satisfy SPP's needs into the near future. Committee members encouraged SPP to continue its negotiations. SPP staff expects to return to the Committee with a recommendation prior to the end of 2017.

### **Administrative Committee "Named Fiduciary"**

The Finance Committee and the SPP Human Resources Committee both currently have formal fiduciary responsibilities related to the SPP pension plan and 401(k) plans, respectively. Both Committees have been working independently during 2017 to move to consolidate all fiduciary responsibility related to these ERISA qualified plans to the SPP Administrative Committee which is comprised of SPP's CEO, CFO, General Counsel and VP of HR. Staff recommended a joint recommendation to the SPP Board of Directors from the HR and Finance Committees to name the Administrative Committee as the Named Fiduciary for the 401(k) and pension plans.

Kelly Harrison made a motion to recommend the SPP Board of Directors name the SPP Administrative Committee as the Named Fiduciary of the 401(k) and pension plans. The motion was seconded by Bruce Scherr and approved by unanimous voice vote.

A question was raised during the discussion on whether or not approving the Investment Policy Statements of the plans was a fiduciary or settlor function. SPP staff consulted with SPP's ERISA counsel after the meeting concluded, who responded that establishing and approving the Investment Policy Statement was a fiduciary function.

### **Organizational Group Scope Review and Annual Self-assessment**

The Committee members reviewed the documented organizational scope and self-assessment and had no changes to recommend.

### **Year to Date Financial Review**

Tom Dunn, SPP's Chief Financial Officer, presented SPP's YTD and full year forecast financials. Highlights included:

- Administrative fee revenues are above budget due to strong 4Q'16 monthly peaks,
- Salary & Benefit expenses are above budget due to 8 incremental unbudgeted positions approved for 2017 and overall vacancy running well below budgeted levels,
- SPP's forecasted over-recovery for 2017 is \$1.5 million

Dunn next presented the expanded Quarterly Capital Project Review report which indicated SPP's 3 year capital expenditure forecast was now \$70.5 million versus budget of \$75 million. The major factors for the reduction are: i)

Finance Committee  
September 26, 2017

delivery of the Enhanced Combined Cycle project for \$1.8 million less than budget and, ii) deferral of phases II and III of the PMU Data Exchange project to 2021 at the earliest.

Finally, the Committee members reviewed the 1-page summaries of the major projects as requested at the prior meeting.

**Future Meetings**

The next meeting of the Finance Committee is scheduled for October 31 and November 1, 2017 at the SPP office in Little Rock, AR beginning at 2:30 p.m. on October 31 and ending at 2:00 p.m on November 1.

There being no further business, Larry Altenbaumer adjourned the meeting at 2:30 p.m.

Respectfully Submitted,

Thomas P. Dunn  
Secretary



Southwest Power Pool, Inc.  
FINANCE COMMITTEE  
**Action Items Status Report**  
June 13, 2017

	<b>Action Item</b>	<b>Date Originated</b>	<b>Status</b>	<b>Comments</b>
1.	Investigate alternative metrics to use in allocating SPP's costs to the region. Expand analysis to illustrate impact on LMP and total cost of service from SPP	July 6, 2016	In Process	Present at Dec 2017 meeting
2.	Engage firm to review work of actuary on benefit plans	April 5, 2016	New	
3.	Staff response to planning linkage framework	Feb 24, 2017	New	Adding project presentation to MOPC agenda in October
4.	IPS – SPP Administrative Committee to develop return and expense benchmarks and document in IPS	Feb 24, 2017	New	Present at Dec 2017 meeting
5.	Review cyber insurance programs	April 5, 2017	New	Present at Dec 2017 meeting
6.	Accounting review of policy regarding capitalization of assets and internal staff time when working on projects	June 13, 2017	New	Present at Oct 2017 meeting
7.	Review default provisions of Attachment X – Credit Policy	June 13, 2017	In Process	TRR routing through RTWG, clarifying enforceability of TSA
8.	Suggest re-branding of Compliance Hotline to Ethics Hotline, add question in employee satisfaction survey on why employees don't utilize the hotline	June 13, 2017	Complete	Suggestion given to Malinda See June 21, 2017
9.	Include 1-page summaries of major projects in financial reports	June 13, 2017	Complete	
10	Evaluate inclusion of credit process controls in SSAE 16 audit scope	July 6, 2016	New	
11	Investigate how SPP member utilities insure against cyber liabilities	July 6, 2016	In Process	To be presented at April 2017 meeting
12	Distribute 10-year financial model	Feb 24, 2017	Complete	Sent April 17, 2017
13	Efficient decision frontier and quilt chart from Stephens	Feb 24, 2017	New	Present at June 13 2017 meeting
14	Provide report of audit firms used for other ISO/RTO financial audits	April 5, 2017	New	Submitted with meeting minutes
15	Fraud Hotline report (process and awareness)	April 5, 2017	New	Present at June 13 2017 meeting
16	Determine capability, capacity, and financial impact for Internal Audit to assist BKD on 2017 financial statement audit	April 5, 2017	New	
17	Customer deposit recon processes, internal audit reviews, construction deposits	Feb 24, 2017	New	
18	IPS – adopt performance benchmarks, report on fund performance vs. benchmarks	Feb 24, 2017	New	Present at June 13 2017 meeting
19				
20				
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Finance Committee  
September 26, 2017



**Southwest Power Pool, Inc.**  
**FINANCE COMMITTEE MEETING**  
**September 26, 2017**  
**AEP Offices (8<sup>th</sup> Floor) – Dallas, TX**

**• A G E N D A •**

**8:30 a.m. – 2:30 p.m.**

- 1. Administrative Items ..... Larry Altenbaumer
  - a. Review of Past Action Items ..... Tom Dunn
  - b. YTD 2017 Financial Results ..... Tom Dunn
- 2. 2018 Operating Plan..... Tom Dunn
- 3. Admin Fee Billing Unit Change..... Tom Dunn
- 4. 2018 Financing Plan ..... Tom Dunn
- 5. Administrative Committee “Named Fiduciary” ..... Tom Dunn
- 6. Organization Group Scope Review and Annual Self-Assessment..... Tom Dunn
- 7. Written Reports.....
  - a. August 2017 Financials
  - b. Financial, Settlements, and Credit Metrics
- 8. Future Meetings.....



**Southwest Power Pool  
FINANCE COMMITTEE MEETING**

**June 13-14, 2017**

**Little Rock, AR**

**• M I N U T E S •**

**Administrative Items**

Chair Larry Altenbaumer called the meeting to order at 2:00 p.m. The following members of the Finance Committee participated:

Larry Altenbaumer	SPP Director
Bruce Scherr	SPP Director
Kelly Harrison	Westar Energy
Laura Kapustka	Lincoln Electric
Mike Wise	Golden Spread Electric Cooperative
Sandra Bennett	AEP
Tom Dunn	SPP
Others attending included:	
Traci Bender (phone)	NPPD
Jerry Peace	OG&E
Richard Ross	AEP
Angie Anderson (phone)	Sunflower
Harry Skilton	SPP Director
Phyllis Bernard	SPP Director
Don Shipley	SPP
Carl Monroe	SPP
Barbara Sugg	SPP
Jerry Wild	SPP
Michael Desselle	SPP
Will Vestal	SPP
Paul Suskie	SPP
Larry Middleton	Stephens Capital Management
Bo Brister	Stephens Capital Management

Minutes from the April 5, 2017 meeting were reviewed. Kelly Harrison motioned to approve the minutes. The motion was seconded by Bruce Scherr and approved by unanimous voice vote.

SPP staff reviewed the past action items list. A number of items had been completed and shared with the Committee since the last meeting and several more are on the agenda to be covered during this meeting. Discussions with BKD regarding cost savings if SPP Internal Audit performed some aspects of the annual financial audit revealed a potential 5% reduction in audit fees. SPP's Internal Audit department indicated resources to perform this additional work would need to be pulled from existing planned audit work. The Committee agreed the cost savings offered by BKD was not sufficient to justify engaging Internal Audit staff on this work at this time.

An item identified at the April meeting but not on the list was added related to review of insurance policies for cyber liabilities.

The Committee was presented with a request to approve an unbudgeted expenditure in the amount of \$1,600,000 on May 31, 2017 related to the payment of legal fees associated with the AES Shady Point arbitration findings. The following Committee members responded via email indicating their approval of this request: Larry Altenbaumer (May 31), Bruce Scherr (May 31), Kelly Harrison (May 31), Sandra Bennett (May 31), Mike Wise (June 1), Laura Kapustka (June 1).

### **Settlement System Replacement Project**

Don Shipley, SPP's Director of Settlements, and Jerry Wild, SPP's Director of IT Applications, provided a detailed review of the project to replace SPP's settlement systems. The review addressed project objectives, timelines, budget, and risks and mitigations.

Several observations rose from the Committee dialogue, including but not limited to,

- SPP should work to improve its project review/transparency for stakeholders and Committee members;
- Forecast accuracy of the RRR file which is the basis for revenue distributions to transmission owners is below expectations (this observation is unrelated to the objectives of the new settlement system);
- SPP should review its capitalization policies for internal labor working on projects;
- Project plan should include a full reversion plan;

SPP staff will include project summaries for larger projects with the financial reports presented to the Committee at each meeting. SPP staff will attempt to focus Committee attention to capital projects during budget review. SPP Regulatory department will be advised of member issues related to revenue forecasts and RRR file processes.

### **Pension Plan Investment Manager Report**

Larry Middleton and Bo Brister of Stephens Capital Management presented a performance report for the SPP Retirement Plan assets as of March 31, 2017. The portfolio experienced net annualized returns of 14.2% and 4.8% for the trailing 1 year and 3 year periods, respectively compared to a 70%/30% S&P 500/Barclays 1-10 bond index benchmark of 11.9% and 8.0%.

Middleton and Brister provided the Committee a copy of the Callan Periodic Table of Returns which the Committee had requested during the February 2017 meeting.

Middleton and Brister also presented information on the efficient investing frontier which the Committee had requested during the February 2017 meeting. Key concepts discussed were:

- View portfolio in two categories: i) Return-generating assets (core equities, satellite equities (emerging market, infrastructure, commodities, etc.), fixed income satellites (high yield bonds, convertibles, private loans), and other return investments; ii) Risk-managing assets (investment grade debt, treasury, cash, etc.)
- Forward looking forecast of existing portfolio yields an expected annualized return of 5.7% with a volatility of 10.1%.
- A higher allocation to Return-generating assets, particularly satellite equities and fixed income, would be expected to annually return 6.0% with a 9.0% volatility over the next 10 years.

The Committee requested the SPP Administrative Committee work with Stephens Capital Management to increase the transparency in the reporting to cover the total expenses incurred by the plan for investment management.

### **Compliance Hotline Report**

SPP staff provided the Committee with a copy of the annual fraud report which is presented to the SPP Human Resources Committee as well as the documented Compliance Hotline Reporting Process. The Committee had 2 suggestions for SPP to consider:

- 1) Re-brand the hotline as the Ethics and Compliance Hotline. Most of the members have similar efforts and all refer to it as the Ethics hotline.
- 2) In the employee satisfaction survey this year, add a question similar to: "Why haven't you used the Compliance Hotline?"

### **AES Shady Point Arbitration**

Paul Suskie, SPP's General Counsel, provided an overview of the AES Shady Point litigation and outcome which resulted in SPP paying \$1.6 million in fees to AES Shady Point. SPP to undertake a review of the default provisions of Attachment X of the tariff to determine the amount of discretion afforded the transmission provider is sufficient.

### **Year to Date Financial Review**

Tom Dunn, SPP's Chief Financial Officer, presented SPP's YTD and full year forecast financials. Highlights included:

- Administrative fee revenues are above budget due to strong 4Q'16 monthly peaks,
- Salary & Benefit expenses are above budget due to 8 incremental unbudgeted positions approved for 2017 and overall vacancy running at 2% versus 4% budgeted,
- SPP's forecasted under-recover for 2017 is \$1.7 million

Finance Committee  
June 13-14, 2017

Dunn next presented the expanded Quarterly Capital Project Review report which indicated SPP's 3 year capital expenditure forecast was now \$70.5 million versus budget of \$75 million. The major factors for the reduction are: i) delivery of the Enhanced Combined Cycle project for \$1.8 million less than budget and, ii) deferral of phases II and III of the PMU Data Exchange project to 2021 at the earliest.

Committee members requested 1-page summaries of the major projects and suggested presenting a consolidated project overview in a 2X2 risk/return chart.

#### **Administrative Fee Billing Units**

Tom Dunn presented the status of staff's efforts to move its cost recovery to market participants and off of transmission customers. Generally Committee members supported the effort as it better aligns the recovery of SPP's costs with a broader base of SPP's customers who benefit from SPP's services.

It was suggested that SPP expand its analysis to illustrate this effort doesn't unduly shift costs. The example presented to the Committee solely looked at allocation of the 1A fee, a more thorough analysis would also illustrate the expected increase in LMPs in SPP's footprint (LMPs increase as the new 1A fee is included as a marginal cost of generation).

SPP staff will present next at the joint SPC/FC meeting on September 26. Prior to then SPP expects to have numerous discussions with various members and customer representatives to more fully explain the proposal and solicit input and collaboration.

#### **Future Meetings**

The next meeting of the Finance Committee is scheduled for September 26, 2017 at the AEP office in downtown Dallas, TX beginning at 8:30 a.m. and ending at 2:30 p.m.

There being no further business, Larry Altenbaumer adjourned the meeting at 11:20 a.m. on June 14, 2017

Respectfully Submitted,

Thomas P. Dunn  
Secretary



Southwest Power Pool, Inc.  
FINANCE COMMITTEE  
**Action Items Status Report**  
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# **2018 OPERATING PLAN**

Published September 26, 2017

By the SPP Finance Department

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## BACKGROUND INFORMATION

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### *PURPOSE OF SPP*

SPP's mission is "Helping our members work together to keep the lights on ... today and in the future." All of SPP's services are provided on a regional basis, independently, focused on reliability and cost effectiveness. The benefits of SPP are derived from this mission and the diligence to bring value to SPP members and their customers. SPP administers reliability coordination, transmission services and wholesale markets for the benefit of all electric utility operations in the region SPP serves. SPP is mandated by the Federal Energy Regulatory Commission (FERC) to ensure reliable supplies of power, adequate transmission infrastructure, and a competitive wholesale electricity marketplace.

SPP's primary services provided to members and customers include:

- Facilitation
- Reliability Coordination
- Tariff Administration
- Transmission Planning
- Market Operations
- Compliance
- Training

### *REGULATORY*

SPP is directly regulated by FERC. All changes to the SPP regional tariff must be filed with and approved by FERC prior to implementation. Failure by SPP to comply with tariff provisions and/or FERC directives must be reported to FERC and may be subject to penalties and fines.

### *GOVERNING DOCUMENTS*

#### **OPEN ACCESS TRANSMISSION TARIFF (OATT, OR "TARIFF")**

The SPP tariff defines the majority of the required workload for SPP's operations and engineering departments. Significant duties include, but are not limited to:

- Tariff administration services, including scheduling
- Ancillary service provisions
- Market operations
- Balancing authority operations
- Settlement of all transactions under the OATT
- Administration of credit services for OATT customers
- Complete system impact studies
- Completion of the annual SPP Transmission Expansion Plan
- Study generation interconnection requests
- Evaluate long-term transmission service requests
- Administer the competitive process for transmission expansion
- Administer the Southwestern Power Administration transmission system beyond their tariff
- Monitor activities in SPP's energy markets and exercise plans to mitigate market power

### **MEMBERSHIP AGREEMENT (MA)**

The MA is an agreement between SPP and each of its members. The MA obligates SPP to perform the services outlined, including those in the OATT. Additionally, the MA describes other significant duties which include, but are not limited to:

- Act as the reliability coordinator for the bulk electric system (BES)
- Develop regional reliability plans and emergency procedures
- Review and approve all planned maintenance of the BES
- Coordinate the maintenance of generation units
- Administer an Open Access Same Time Information System

### **BYLAWS**

The bylaws describe the organizational operation of SPP, specifically outlining the duties of the board of directors and committees advising the board. SPP has a responsibility to facilitate meetings of every organizational group. The scope of the organizational structure is as follows:

- Board of directors (1)
- Regional State Committee (1)
- Members committee (1)
- Board-level committees (6)
- Working groups (19)
- Task forces, subcommittees, strike teams (35+)

### **PROTOCOLS AND BUSINESS PRACTICES**

SPP has well-documented business practices which detail the administrative practices SPP follows in administering the OATT, including coordinating the sale of transmission service. SPP also has well-documented market protocols which detail how customers and SPP are to interact. These documents are developed through SPP's stakeholder process.

### ***ORGANIZATIONAL STRUCTURE***

SPP operates via two distinct organizational structures. The first, referred to as the governance structure (see Appendix A: Group Organizational Chart), begins with the board of directors and cascades into board level committees and then to working groups. This organizational structure is populated largely with representatives from SPP's member companies. Generally, the output of this structure is directives on the work SPP is expected to accomplish.

The second organizational structure, the internal staff (see Appendix B: SPP Organizational Chart), illustrates reporting relationships between employees. The staff structure begins with the SPP president and cascades into vice presidents, departmental directors/managers, etc. The staff structure is generally aligned based on functional responsibilities. This structure receives the directives from the external structure and then goes forward in acting on the directives.

### ***FUNDING***

SPP funds its ongoing operating costs through charges to customers under the tariff and customers of specific non-tariff services. SPP's operating costs are inclusive of scheduled principal and interest payments on its outstanding debt but are exclusive of depreciation and amortization expenses

incurred. SPP is able to collect up to 100% of its operating costs from charges to transmission customers up to a cap of 43¢/MWh. SPP is charging customers 41.9¢/MWh for service in 2017.

SPP's capital expenditures are funded with borrowings from periodic debt issuances and with 20% equity allocation included in the transmission service charge referenced above. SPP's debt issuances are generally unsecured, have a one-to-two year, interest-only payment period and then fully amortize by the maturity of the notes. SPP is required to obtain regulatory approvals prior to issuing new debt. SPP carries an A rating from Fitch Ratings which was last affirmed in August 2017. SPP staff believes SPP will need to issue new notes in 2018 to fund capital expenditures.

Short-term liquidity is provided by managing SPP's cash float. SPP has a committed \$30 million revolving credit facility to provide additional liquidity support. SPP is soliciting funding for a larger committed guidance line with a 5 year maturity to fund capital expenditures. The key aspect requested in the guidance facility is the ability to convert outstanding balances to fixed rate term notes. Staff expects to complete negotiations with lenders late 4Q'17 and, if successful, present a proposal to the SPP Board of Directors in early 2018.

## ***2018 EXPECTED BUSINESS ENVIRONMENT***

The expectations described below largely resemble those in last year's Operating Plan, with attention given to cybersecurity, the proliferation of renewable energy resources, and the impact of energy efficiency on load. An exception, though, is found in the regulatory arena, where a new presidential administration and subsequent changes in policy and regulatory and legislative leadership have brought numerous issues into question.

### ***Cybersecurity***

The threat of cyber-attacks continues to be one of SPP's and the entire industry's top risks. Critical infrastructure protection standards continue to evolve to cover areas such as supply chain protection, and such standards serve as robust, base-level requirements to secure our critical assets. The culture throughout the electric industry, though, is maturing from one of compliance to a culture of security.

SPP and its peers must remain involved in the development and implementation of regulations and standards to ensure that they allow for the flexibility needed to meet the security challenges they face in continuing to provide reliable, affordable electricity to consumers. The industry must continue to prioritize cybersecurity maturity above and beyond that which is required for compliance as evolving threats and emerging technologies surface faster than standards can be contemplated and promulgated.

### ***Energy Efficiency***

Continued innovation in the arena of energy efficiency, and particularly with regard to consumer goods, will continue to impact the load profiles of SPP and the entire electric utility industry. In the short-term, more efficient appliances and consumer electronics will continue to hold demand low. Soon, though, new technology and products – e.g., electric and autonomous cars – will become cheap enough to proliferate the consumer market, at which time the industry should expect load to grow significantly.

### ***Renewable Proliferation***

SPP expects continued growth in wind generation on our system. By the end of 2017, SPP will have more than 17 GW of wind capacity, and there is more than 36 GW of additional wind capacity in the generator interconnection study queue. While SPP has reliably managed wind penetration levels of

more than 50 percent and anticipates levels of 60 percent by 2018, a saturation point will be reached at which wind resources will need to be exported to other regions or curtailed to remain economically and reliably viable.

The SPP region has still seen only limited growth in solar, but that is soon expected to change. With regard to pending generator interconnection requests, solar power is second only to wind with more than 7 GW in SPP's study queue.

### ***Distributed Energy Resources***

Utility experts continue to wrestle with the question of the eventual impact of distributed energy resources (DER) on the reliability of the grid. Former FERC Chairman Cheryl LaFleur has suggested that decentralization may have already reached a tipping point, meaning utilities and grid operators will be forced to deal with DERs, whether as a threat or compliment to existing models. This may be hastened by the nation's changing resource mix (see "Renewable Proliferation" above), which is driving down the cost of solar photovoltaic and energy storage technology. Regardless of how decentralized the grid of tomorrow will become, adequate transmission infrastructure will play a crucial role in ensuring its reliability. SPP will also need to respond to changes prompted by its members and their customer bases, including those related to market support for locational issues.

### ***Regulatory Changes and the Trump Administration***

The election of President Trump and the coupling of his administration with Republican majorities in Congress will likely bring change to the power and utilities sector. Given the decreased threat of a presidential veto, there is potential for comprehensive energy legislation to be passed by Congress for the first time since 2005. Such legislation could lead to a significant amount of planning and analysis by regional transmission organizations (RTO), including SPP. The last attempt at comprehensive energy legislation failed during the previous administration but its policy provisions are likely to resurface during the current session of Congress.

The most notable and potentially relevant policy provisions to SPP are those related to grid hardening and security and provisions related to markets and distributed energy resources. For example, the House version of the 2016 energy bill would have required a "strategic reserve" of spare power transformers and emergency mobile substations to restore the grid after physical or cyberattack, electromagnetic pulse attack, geomagnetic disturbance, severe weather, or seismic events.

In addition to influencing the odds of comprehensive energy legislation, the new administration has resulted in a new FERC with four of the five commissioners being newly appointed to their posts. While there remains some regulatory uncertainty as to the priorities of this new FERC, the Department of Energy's (DOE) grid study provides some insight into the likely policy issues FERC will address in the coming year.

The study calls for FERC to expedite its efforts with states, RTO/ISOs, and other stakeholders to improve energy price formation in centrally-organized wholesale electricity markets, including negative pricing. And it directs the agency to study and make recommendations regarding efforts to require valuation of new and existing essential reliability services by creating fuel-neutral markets.

It is also expected that FERC will continue its focus on energy infrastructure issues that enable policies to streamline permitting for critical energy assets, especially to the degree the facilities support the resiliency and affordability themes laid out in the DOE staff report.

Perhaps the most immediate impact on utilities under the Trump administration is the elimination of aggressive deadlines for carbon emissions reductions from the generation fleet that were prescribed under the Environmental Protection Agency's Clean Power Plan. To comply with the Clean Power Plan, some utilities had taken steps to bring down emission levels, which included the shutting down of old coal-based power plants, investing in emission control equipment, and increasing the share of natural gas and other energy sources in electricity generation.

Although the CPP may be repealed or replaced with a less stringent emission standard, it is unlikely the decline in coal-fired power generation will be reversed; however, coal-focused electric utilities will likely be able to run their coal units for a longer period than expected earlier. This is because in many cases, the switch from coal to natural gas and renewables is being driven by factors beyond federal regulations. The primary driver has been and will continue to be economic. Coal is not competitive with lower-priced and widely-available natural gas, and the cost of developing renewable energy resources continues to decline. Therefore, it is expected that natural gas use increases across the SPP footprint with continued investment in natural gas-fired combined cycle resources while coal consumption decreases as coal loses market share to natural gas and renewable generation in the electric power sector.

Throughout 2018 and beyond, renewable generation will continue to grow. With a continued tax credit and declining capital costs, it is expected that solar capacity growth continues across the SPP footprint in the long term while tax credits provided for plants entering service until, but no later than 2024, provide incentives for new wind capacity in the near term.

## MAJOR 2018 PROJECT INVESTMENTS

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### *SETTLEMENT SYSTEM REPLACEMENT (STARTED IN 2016)*

Replace the current market and transmission settlement systems with a custom designed, single, high-performance, scalable system solution.

#### **BENEFITS**

Expand automation of the settlements processes to improve accuracy, timeliness, and auditability of the processes. Expect significant reduction in long-term support costs for the settlement function.

#### **STRATEGIC PLAN LINKAGE**

**Enhance member value and affordability:** Existing settlement system has proven to be inefficient, resulting in many manual adjustment processes to complete daily settlements.

#### **INVESTMENT AND TIMELINE**

The project initiated in 2016 and is expected to complete in 2Q'19. Significant milestones are:

- Research and evaluation of opportunities ..... **(completed)** 2016
- RFP and vendor selection.....**(completed)** 2017
- Formula builder.....**(completed)** July 2017
- Calculation engine ..... Feb 2018
- User interface ..... July 2018
- Development complete, market trials start..... Dec 2018
- Go-live..... May 2019

#### Capitalized Development Costs (\$million)

- Software..... \$5.30
- Allocated IT expenditures (virtual servers, storage, etc.)..... \$0.98
- **Total Capitalized Development Costs** ..... **\$6.28**

SPP expects an increase of three full-time IT employees responsible for support and maintenance of the system. Once implemented, SPP will no longer pay for vendor provided support and maintenance of approximately \$1.4 million annually. Additionally, there will be replacements of hardware assets on SPP's standard five-year replacement schedule.

#### **RISKS**

Two significant risks have been identified:

- 1) New solution requires internal ownership for IT support and development of future enhancements. There is a risk internal IT would not be staffed appropriately to facilitate this required support and anticipated cost savings would not be realized. The project includes significant testing by SPP resources throughout code development to ensure familiarity with

the code. Hiring of incremental IT resources will occur early in 2018. These efforts are intended to mitigate the identified risk.

- 2) Settlement system solution represents a paradigm shift in the settlement and IT processes, including system and database approach. Cost savings are dependent on a successful shift in data gathering and processing. The vendor has a proven track record in customized financial system implementations and is nearing completion of similar settlement system replacement at a U.S. RTO.

### ***VOLTAGE SECURITY ASSESSMENT TOOL (VSAT) (STARTED IN 2017)***

The online VSAT will identify constraints on the transmission system that real-time operators will be able to mitigate using current congestion management tools. The VSAT will enable real-time operators and operational planning engineers to prepare for and react to stability concerns in order to maintain reliable operation of the BES.

#### **BENEFITS**

The most significant goal of this project is to identify areas of voltage concerns with real-time and near-term data. This can be done more efficiently using the VSAT's ability to construct a power-voltage curve with multiple defined contingencies. With the increase in variable generation in SPP's service area, power transfers and supply variability will become increasingly less predictable. VSAT will equip SPP to better predict the state of the system in order to facilitate reliable outage coordination, forward unit commitment, reliability assessments, and general reliable operation of the BES. VSAT will bolster SPP's compliance with NERC standards FAC-011-2, IRO-005-3.1a, IRO-008-2, IRO-009-2, and IRO-101-2.

#### **STRATEGIC PLAN LINKAGE**

- Reliability Assurance

#### **INVESTMENT AND TIMELINE**

VSAT implementation began in 2017 and will complete before the end of 2018. Initial capital costs include purchase of software, purchase of computer hardware, and new functionality added to the energy management system (EMS) software to facilitate the export of data. Total capital investment to bring the VSAT project to functional status is expected to be \$1.6 million.

#### **RISKS**

VSAT has been implemented at other RTOs that utilize an EMS on the Alstom (now GE) platform. Their implementations have been straightforward. SPP anticipates a similar implementation since this is a proven application and architecture. Internal resource constraints may impact the timeline for implementation but are not expected to be a factor.

### ***TRANSIENT STABILITY ANALYSIS TOOL (TSAT)***

Online TSAT helps prevent damage to generating equipment. Rotor angle stability, frequency stability and voltage stability are the three main breakdowns for analyzing power system stability. The TSAT application will monitor transient stability by taking an EMS snapshot case and performing power system transfers that stress the current case. Additional dynamic machine characteristics will be mapped to the EMS case. If the tool indicates transient stability issues corrective actions will be made in order to maintain reliable operation of the transmission system. TSAT will be used to ensure power

transfers do not cause a voltage collapse event or blackout. SPP’s current tools are not capable of identifying transient stability issues.

**BENEFITS**

The major benefit of the project is risk avoidance. This project will reduce reliability risk and improve the ability to operate at record variable generation levels. The reliability risk is directly associated with preventing damage to generation equipment. Transient stability is currently not evaluated in real-time operations. The additional awareness will provide SPP operators with increased situational awareness and lead to reduced risk operating the grid. Most North American ISO/RTOs have this tool in operation. SPP is the last to install this type of real-time sophisticated analysis at the ISO/RTO level.

Assuming TSAT prevents damage to one turbine shaft annually and considering the cost of a generator turbine shaft replacement (based on research papers indicating average cost to replace damaged equipment due to transient instability), cost savings would be approximately \$12million - \$21.5 million.

**STRATEGIC PLAN LINKAGE**

- **Reliability Assurance:** The increasing amount of volatility from renewable resources has the potential to create unstable conditions that SPP’s current tools are not equipped to identify. This project addresses issues found in the last two SPP wind studies, closes a potential compliance gap, and largely increases the reliability of the BES with the large amount of changing resource fuel mix. Wind generation has different characteristics than the conventional coal, gas and hydro generation (inertia, frequency response, voltage and reactive control, response to faults, etc.) Having a substantial part of the load covered with wind generation and less with traditional coal, gas and hydro changes the dynamic behavior of the BES. Other contributing areas that create a more complex behavior of the BES: use of phase shifters, high parallel flows from external RTO’s, DC lines parallel to AC lines.

**INVESTMENT AND TIMELINE**

The project will begin once the VSAT application is complete in production, which is expected to be in 1Q’18. The TSAT application is expected to be in production 1Q’19.

Capitalized Development Costs (\$million):

• Hardware .....	\$0.77
• Licenses .....	\$0.29
• Consulting.....	\$0.36
• Other allocated IT Expenditures (virtual servers, storage, etc.).....	<u>\$0.20</u>
<b>Total Capitalized Development Costs.....</b>	<b>\$1.62</b>

Once implemented, the project is expected to require expenditures for annual license fees and software maintenance. Additionally, there will be replacements of the hardware assets on SPP’s usual five-year replacement schedule.

**RISKS**

The most significant risk to timely implementation is the capacity of SPP staff to perform work associated with this project in addition to its routine daily workload. This project will require meaningful attention from SPP’s operations engineering staff, already operating at full capacity.

### **TRAINING AND TESTING SIMULATED ENVIRONMENT (TTSE)**

SPP’s Dispatcher Training Simulator (DTS) does not meet the requirements of SPP’s Operations department with the addition of balancing authority, reliability unit commitment and real-time balancing market functions, due to the lack of an integrated market system. Since the implementation of the Integrated Marketplace and SPP becoming the consolidated balancing authority, market systems have become integral to maintaining reliability and balancing. Realistic simulation training, using market systems, is imperative to SPP operator readiness and ultimately increased reliability for the SPP footprint.

The project was initially proposed in three phases:

- Phase 1: create stand-alone DTS separate from SPP’s customer training system
- Phase 2: create market system environment
- Phase 3: add virtualization tools mimicking those available in the control center

### **BENEFITS**

The major benefit of the project is risk avoidance. SPP stakeholders expect operations staff performing SPP’s critical real-time functions to be well-trained. Existing capabilities do not contemplate market solutions and impacts, resulting in the unrealistic simulations.

### **STRATEGIC PLAN LINKAGE**

**Reliability Assurance:** Provides realistic training simulations for SPP’s real-time operators to best prepare them for the challenges experienced while on shift.

### **INVESTMENT AND TIMELINE**

Phase 1 of the project initiated in 2016 and resulted in the implementation of a stand-alone training simulation environment for SPP’s operations staff. Phase 2 of the project will result in the addition of market simulation capability and contains two components: a) assembly of market simulation hardware and environment and b) build and integrate market simulation software. Phase 3 of the project will add visualization tools to the simulation environment closely mimicking the screens available at the real-time desks.

The completion timelines for each phase are:

- Phase 1: EMS Simulation ..... **(Complete)** Dec 2016
- Phase 2: Market Simulation
  - 2A.....Sept 2017
  - 2B..... Dec 2019
- Phase 3: Visualization ..... Dec 2018

Capitalized Development Costs (\$million)

- Phase 1 ..... \$0.23
- Phase 2A ..... \$0.18

• Phase 2B .....	\$3.00
• Phase 3 .....	<u>\$0.09</u>
<b>Total Capitalized Development Costs.....</b>	<b>\$3.50</b>

Once implemented, the project is expected to require expenditures for annual license fees and software maintenance of nearly \$0.30 million annually. Additionally, replacement of the hardware assets will occur on SPP’s standard five-year replacement schedule.

**RISKS**

The market integration piece of this project (Phase 2B) was based on a proposal from AREVA/Alstom/GE. Due to the \$3 million turnkey quote, SPP staff has been evaluating a number of potential in-house solutions. In April 2017, as the complexity of Phase 2 evolved, it was split into A and B sub-phases to get the hardware and initial market environment in place to test potential solutions and determine the best path forward before committing more resources and capital.

The primary challenge is synchronizing the market time, which runs on wall clock/server time, with DTS scenario time. The DTS can be paused or restarted from a previous point, whereas the market runs continually. Unlike other RTOs with a GE market system, SPP’s market system has a market control component. This increases the complexity and unknowns of the project, as this is something GE has not utilized in a simulation system before.

*DEFERRED, CONTINGENT OR DECLINED PROJECTS*

The following projects have been identified as valuable but are not recommended for budget approval at this time. Reasons for not recommending the projects generally are due to uncertainty about regulatory requirements, timelines, solution, etc.

**DISTRIBUTED GENERATION FUNCTIONALITY**

Project would enhance SPP’s markets to allow participation by distributed generation resources and storage devices. FERC has issued a notice of proposed rulemaking but has not issued a final order detailing the requirements for compliance.

**Estimated capital investment:** \$1.8 million

**RELIABILITY COMMUNICATIONS TOOL**

Project would create an application to facilitate the systematic issuance, receipt, and auditable documentation of operating instructions.

**Estimated capital investment:** \$0.25 million

**FREEZE DATE REPLACEMENT**

The project will update the process that calculates firm rights used in real-time congestion processes in accordance with new rules and requirements agreed upon by CMP (SPP, MISO, PJM, TVA, AECI, MHEB, LGEE) members.

**Estimated capital investment:** \$0.35 million

**REPLICATED DATA SERVER UPGRADE**

The replicated data server gives SPP transmission operators and transmission owners a near real-time view of SPP's real-time models, substation one-line drawings, SCADA measurements, powerflow solution results, and real-time contingency analysis warnings and violations.

**Estimated capital investment:** \$0.26 million

## 2018 MAJOR TECHNOLOGY INVESTMENTS

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SPP's ability to provide the vast majority of its services is contingent on a robust and resilient technology infrastructure. SPP operates two data center facilities with full fail-over capacity in the event a single data center is unavailable. Within the data centers exist over 1,900 physical and virtual servers across multiple environments interconnected by a high availability network. Significant investments are made annually to maintain the existing capabilities of the technology infrastructure and enhance it to address new demands on the system, cyber security requirements, and incremental additions to SPP's service menu.

### **SYSTEMS ADMINISTRATION**

The major initiatives in the 2018 fiscal year include:

- Technology refresh of aged server systems (*based on IT's lifecycle policy*)
- Additional data storage for both data center sites (*production and backup capacity*)
- IT service management tool upgrade/replacement

### **TECHNOLOGY/SERVER REFRESH**

The systems administration team manages approximately 450 physical servers and roughly 1500 virtual servers. Generally speaking, IT's policy is to replace physical hardware after a five-year useful life based on exposure to increased failure rates, discontinued or unaffordable vendor support, operating system incompatibility, and the need for faster application performance and connectivity requirements.

SPP has approximately 160 physical servers (dedicated and virtualized) targeted for replacement during 2018 at a total expected replacement cost of \$2.8 million. In concert with the server refresh, SPP will continue to deploy and expand virtualization technology to maximize the utilization of computer hardware and software wherever possible.

### **DATA STORAGE**

SPP utilizes multiple storage technologies to manage data based on the speed, confidentiality, and frequency of use of the stored data. The total capacity of all storage platforms and technologies in place at SPP is 1.5 petabytes. SPP's need for additional storage grows annually based on the retention of years of Integrated Marketplace data and due to additional entrants to SPP's transmission and market services. SPP expects to add flash storage technology in 2018 at a cost of nearly \$1.0 million.

### **SERVICE MANAGEMENT**

SPP's current tool to perform incident, problem, change, asset, release, service request, and knowledge management functions is nearing its end of life. This tool is critical for performing processes related to change and configuration management for CIP-010 and SOC-1 as well as patch management related to CIP-007. SPP is performing a complete review of the system to determine if an upgrade is viable or if replacing the tool with a different product is the more viable and reasonable solution to ensure SPP is leveraging the best possible ITSM tool for the best value. SPP is also seeking a more user friendly interface that allows for better self-service, full service visibility with dashboards and reporting to

make better decisions, and drive improvements with service and asset awareness. The costs of upgrade or full replacement are not known at this time.

## ***IT ARCHITECTURE***

SPP maintains an architectural roadmap to guide its evaluation of and evolution to emerging technologies. The 2018 initiatives aligning with the architectural roadmap include the following:

- Data-Lake and Big Data infrastructure foundation
- Analytic and visualization tools

### **DATA-LAKE AND BIG DATA**

SPP utilized Netezza storage appliances as part of Integrated Marketplace project to store historical operational data for business analysis. The Netezza appliances started running out of storage as marketplace data exceeded initial business expectations. Also, the business started requesting access to more historical marketplace operational data (up to five years' worth) and keeping energy imbalance service production data online for time series analysis, data mining, and to produce reports. Data growth and new business requirements gave birth to the Data Lake project, which started in 2016 as an IT foundation project.

The Data Lake project's phase-one goals were to offload less frequently used data from production Netezza appliances to a cost-economical BigData storage solution that provides SQL access to the data, scales incrementally at both compute and storage levels depending on need, and postpones the need for purchasing new Netezza appliances. Phase 1 was successfully implemented and the purchase of new Netezza appliances was postponed.

Data Lake's Phase 2 is currently in progress and concentrates on data access controls, improving checkpoint/restart capabilities, improving SQL query performance, evaluating/implementing transactional capabilities, offloading more historical data from Netezza appliances, and evaluating technologies to feed data directly to Data Lake infrastructure.

Data Lake Phase 3 is slated for 2018. Its goals were to open more Data Lake functionality to business users to run existing processes on the Data Lake infrastructure, provide active-active infrastructure between data centers, implement technologies to feed data directly to Data Lake infrastructure, provide visualization and data analysis capabilities using the tools supported by the data services team, and reduce the dependency on costly Netezza type appliances.

This project reduces the cost of storing historical data for business analysis by reducing the dependency on large Netezza-type appliances. It eliminates the need for either new business tools or rewriting existing queries. It allows incremental scaling at either compute or storage independently which reduces capital and operation expenses. It eliminates time-consuming data migration and verification processes involved with appliance replacements. It also provides federated query capabilities to join the data for future optimizations in data storage.

SPP offloaded 50+ terabytes of data from production Netezza appliances as part of Data Lake phase 1 and postponed \$2.6 million in capital cost (need for purchasing new Netezza appliances).

Phases 1 and 2 included capital costs of \$1 million and allocated staff costs for 4.5 FTEs. Phase 3 capital costs are forecast at \$0.4 million and allocated staff of 2.25 FTEs. The project is expected to provide a 24.47% internal rate of return based on the seven-year cost model.

### ***CYBER SECURITY***

SPP intends to add numerous customizations to its arsenal of cyber monitoring, control, and remediation applications. These customizations will provide additional strength to SPP's already formidable cyber defenses. Additionally, SPP will be adding licenses for its cyber defense applications to allow deployment across other assets and data technologies.

## KEEPING THE LIGHTS ON

Reliability is job number one at SPP. It is the central focus of every decision and action undertaken within the organization. Internally, this is known as “keeping the lights on” or KTLO. It is the central theme of the organization’s mission statement, “Helping our Members work together to **keep the lights on**... today and in the future.” SPP’s responsibility toward reliability and other important services is delineated in numerous agreements, contracts, tariff, protocols, standards, etc. Significant resources are dedicated directly to fulfilling these obligations and significant support resources are invested in helping the direct satisfaction of these obligations.

### INTERNAL WORK GROUPS

SPP’s internal organizational structure is designed to ensure appropriate focus and leadership is deployed to address the KTLO work described above. Many groups have direct responsibilities to accomplish the work while others are available to provide necessary support.

### OPERATIONS

Operations	Salary & Benefits	Travel	Services	Other	Total Exp	Cap Ex	Approved Staff
2018 Budget	\$ 22.5	\$ 0.3	\$ 0.3	\$ 0.1	\$ 23.1		162
2017 Forecast	\$ 21.4	\$ 0.2	\$ 0.2	\$ 0.1	\$ 21.9		162

SPP’s operations department is responsible for many of the duties and responsibilities outlined in the OATT and MA. Operations staff are the front-line employees who engage real-time in the reliability and market aspects of SPP on a 24-hour-a-day, seven-day-a-week basis. Staff consists of engineers, certified system operators and specialized support personnel. The department is organized across three distinct subgroups:

1. System operations
2. Markets
3. Operations support

Significant duties include regional reliability coordination, tariff administration, transmission service, real-time and day-ahead market operations, maintaining models for state estimator and commercial modeling tools, training, and balancing authority operations. Additionally, operations staff work with numerous stakeholder groups including the Markets and Operations Policy Committee, Business Practices Working Group, Balancing Authority Operating Committee, Generation Working Group, Operating Reliability Working Group, and Operations Training Working Group. Finally, staff represents SPP and its members at numerous North American Reliability Corporation working groups.

2018 Priorities	Strategic Plan Linkage
<p>Complete a Renewable Generation Integration Study overseen by the Transmission Working Group. The study will analyze inter-modal oscillations identified in the 2017 Variable Generation Integration Study. Additional studies will analyze the 60% and 80% variable generation penetration cases.</p>	<ul style="list-style-type: none"> <li>Reliability Assurance</li> <li>Optimize Interdependent Systems</li> </ul>
<p>Enhance operator tools – Implement voltage stability analysis systems, build transient stability analysis systems, continue analysis of PMU data from members and neighboring systems.</p>	<ul style="list-style-type: none"> <li>Reliability Assurance</li> </ul>
<p>Enhance operator capabilities – implement formal “learning team” processes, enhance simulation exercises to track closer to real world experiences</p>	<ul style="list-style-type: none"> <li>Reliability Assurance</li> </ul>

**ENGINEERING**

Engineering	Salary & Benefits	Travel	Services	Other	Total Exp	Cap Ex	Approved Staff
2018 Budget	\$ 10.6	\$ 0.3	\$ 2.1	\$ 0.6	\$ 13.7		80
2017 Forecast	\$ 9.9	\$ 0.3	\$ 1.9	\$ 0.5	\$ 12.7		80

Principal duties of SPP’s engineering department include planning SPP’s transmission system to meet future regional reliability, economic, and public policy needs in an optimized manner; tracking progress and costs of approved transmission expansion projects; and performing longer term (longer than one year) studies necessary to process requests for generation interconnection, transmission service, and transmission congestion rights. The department also performs data gathering and reliability assessment responsibilities in support of the SPP Regional Entity. The predominance of these duties are required by SPP’s tariff, business practices, MA, NERC Reliability Standards, and SPP Criteria.

2017 Priorities	Strategic Plan Linkage
<p><b>Improved Process Alignment:</b> work with stakeholders to identify and recommend improvements to better align the Aggregate Transmission Service Study (ATSS), GI, congestion hedging, and transmission planning assumptions and processes to alleviate concerns about the planning assumptions and the inability of customers to convert transmission rights into transmission congestions rights.</p>	<ul style="list-style-type: none"> <li>• Reliability Assurance</li> <li>• Enhance Member Value</li> </ul>
<p><b>Planning Studies:</b> Complete the initial ITP assessment under the processes approved by the Board and stakeholders in 2017. Study will complete in 2019.</p>	<ul style="list-style-type: none"> <li>• Maintain Economical, Optimized Transmission System</li> </ul>
<p><b>Customer Initiated Service Studies:</b> Implement any improvements approved through the GI Improvement Task Force to enhance SPP's ability to process growing numbers of GI requests.</p>	<ul style="list-style-type: none"> <li>• Reliability Assurance</li> </ul>
<p><b>Capacity Margin Refinement:</b> Address FERC identified deficiencies in SPP's reserve adequacy processes and implement the improved process.</p>	<ul style="list-style-type: none"> <li>• Reliability Assurance</li> <li>• Enhance Member Value</li> </ul>
<p><b>Rayburn Country Study:</b> Complete PUCT requested study of the impact of moving Rayburn Country's facilities and load from SPP to ERCOT</p>	<ul style="list-style-type: none"> <li>• Reliability Assurance</li> <li>• Maintain Economical, Optimized Transmission System</li> </ul>

**INFORMATION TECHNOLOGY**

Information Technology	Salary & Benefits	Travel	Services	Other	Total Exp	Cap Ex	Approved Staff
2018 Budget	\$ 21.7	\$ 0.1	\$ 4.7	\$ 22.0	\$ 48.4		164
2017 Forecast	\$ 20.1	\$ 0.1	\$ 4.1	\$ 20.4	\$ 44.6		161

The primary mission of IT is to develop, deploy, integrate and support the applications and infrastructure that supply SPP's operational and corporate systems. IT is divided into five primary groups (Enterprise Operations, Applications, Sourcing Strategy, Quality Control, and Cybersecurity), along with a chief architect.

The Enterprise Operations department provides 24x7-support for all communications and networking systems and all computer hardware and environmental needs for SPP's data centers. Each of these activities is critical to SPP's transmission, market, reliability and business processes. IT-Operations also provides technical direction, leadership, and architectural design for the communications, network,

storage, backup/recovery, and computing platforms for all aspects of the IT infrastructure utilized within SPP.

The IT-Applications department provides 24x7-support for existing systems including transmission, reliability, and Integrated Marketplace. The department is responsible for coordinating all software development efforts related to these key business systems, as well as planning and supporting the integration of new members/market participants such as Integrated Systems. IT-Applications plays an integral role in nearly all new projects, including the creation of requirements/test/rollback plans; developing software; providing technical leadership; defining, implementing and reviewing architecture; and providing ongoing maintenance and support for systems.

The Sourcing Strategy team is responsible for managing the IT budget and facilitating/negotiating business activities with major IT vendors. The team works closely with other IT departments to enact an appropriate short- and long-term budget and acquisition philosophy which incorporates vendor leveraging/relationships, asset lifecycles, and adequate maintenance coverage.

The Quality Control team works to identify and implement risk mitigation strategies to assist in compliance and protection of SPP's assets. The team is responsible for conducting timely internal reviews of evidence to ensure ongoing compliance obligations are met. The team owns and maintains the documentation of all processes and procedures related to compliance for IT and select non-IT departments, including the associated and applicable Reliability Standard Audit Worksheets (RSAWs). The team also plays a significant role in IT EMBC/Recovery Planning, owning and facilitating applicable processes, procedures, and testing activities.

The Cybersecurity team was enhanced and consolidated in 2016 to ensure SPP complies with all requirements of the FERC-approved NERC cybersecurity standards. The team proactively evaluates and employs best practices to ensure SPP's overall IT security is at optimal levels. They work closely with IT and SPP's compliance departments to ensure security measures are adopted, implemented and followed according to SPP policies.

2018 Priorities	Strategic Plan Linkage
Automation: Areas of focus that will continue from 2017 into 2018 include patch management, server provisioning, and application testing. In each of these areas, IT staff spends significant time performing manual processes to build, track, replicate, and verify information. Implementation of automated processes will allow the team to reduce manual activities while providing improved quality and consistent outcomes.	<ul style="list-style-type: none"><li>• Enhance Member Value</li></ul>

Reduce third-party consultant engagements: increased and aligned skills of internal staff to become more self-sufficient in supporting SPP’s infrastructure and applications and better positioned to assume support for enterprise projects (e.g., Z2 and Settlements replacement). Staff augmentation through consultants is projected at less than \$0.5 million in 2018 from a high of \$1.6 million in 2014

- Enhanced Member Value

Cybersecurity and CIP Compliance: The Cybersecurity team plans to perform routine training for all staff to quantify adherence to SPP policies and best -practices. At a corporate level the team plans to mitigate risk by implementing tighter controls over CIP assets/systems while performing ongoing penetration testing, vulnerability assessments and recovery exercises.

- Reliability Assurance
- Enhance Member Value

IT compute and data infrastructure: begin implementation of an alternative compute infrastructure during 2018 and beyond. Migration to the new platform will be a gradual process aligned with the refresh of existing servers and installations of new project requirements. This infrastructure will improve provisioning efficiency and manageability and as SPP adopts new platforms and environments

- Enhance Member Value

Data Governance: IT has attempted to implement a “fit for purpose” approach whereby the most cost-effective storage solution is aligned with user/application requirements. SPP will continue that approach with a focus on implementing effective processes to allocate/control/delete data in accordance with retention policies and/or end-user requirements. Success initiative will eliminate unnecessary/duplicative data and improve data life-cycle management.

- Enhance Member Value

**CORPORATE**

<b>Corporate *</b>							
	<u>Salary &amp; Benefits</u>	<u>Travel</u>	<u>Services</u>	<u>Other</u>	<u>Total Exp</u>	<u>Cap Ex</u>	<u>Approved Staff</u>
2018 Budget	\$ 30.8	\$ 0.9	\$ 5.4	\$ 6.5	\$ 43.7		138
2017 Forecast	\$ 30.7	\$ 0.9	\$ 5.4	\$ 5.5	\$ 42.4		137

\* Includes Admin/Officer, Corporate Services, Reg/Legal/RSC, Interregional Relations/Market Design, Communications/Government Affairs and MMU

The corporate group has responsibility for many broad aspects of the organization and includes the following support areas:

- Executive
- Communications
- Accounting
- Gov’t Affairs
- Legal
- Human Resources
- Regulatory
- Administration
- Settlements
- Facilities
- Credit
- Market Monitoring

This group holds the budget for several expenses which are not allocated across the company such as pension expense, corporate liability insurance, and board of director compensation.

<b>2018 Priorities</b>	<b>Strategic Plan Linkage</b>
Membership expansion: to the extent Mountain West Transmission Group proceeds with membership in SPP, considerable focus on ensuring the implementation proceeds timely and smoothly	<ul style="list-style-type: none"> <li>• Optimize Interdependent Systems</li> </ul>
Settlements: build of the replacement system will consume the entire year. The project plan utilizes the “agile” delivery process which enables ongoing testing of the delivered components throughout the construction phase.	<ul style="list-style-type: none"> <li>• Enhance Member Value</li> </ul>

**PROCESS INTEGRITY**

<b>Process Integrity</b>							
	<u>Salary &amp; Benefits</u>	<u>Travel</u>	<u>Services</u>	<u>Other</u>	<u>Total Exp</u>	<u>Cap Ex</u>	<u>Approved Staff</u>
2018 Budget	\$ 7.9	\$ 0.3	\$ 1.0	\$ 0.1	\$ 9.3		54
2017 Forecast	\$ 7.1	\$ 0.2	\$ 0.5	\$ 0.1	\$ 8.0		53

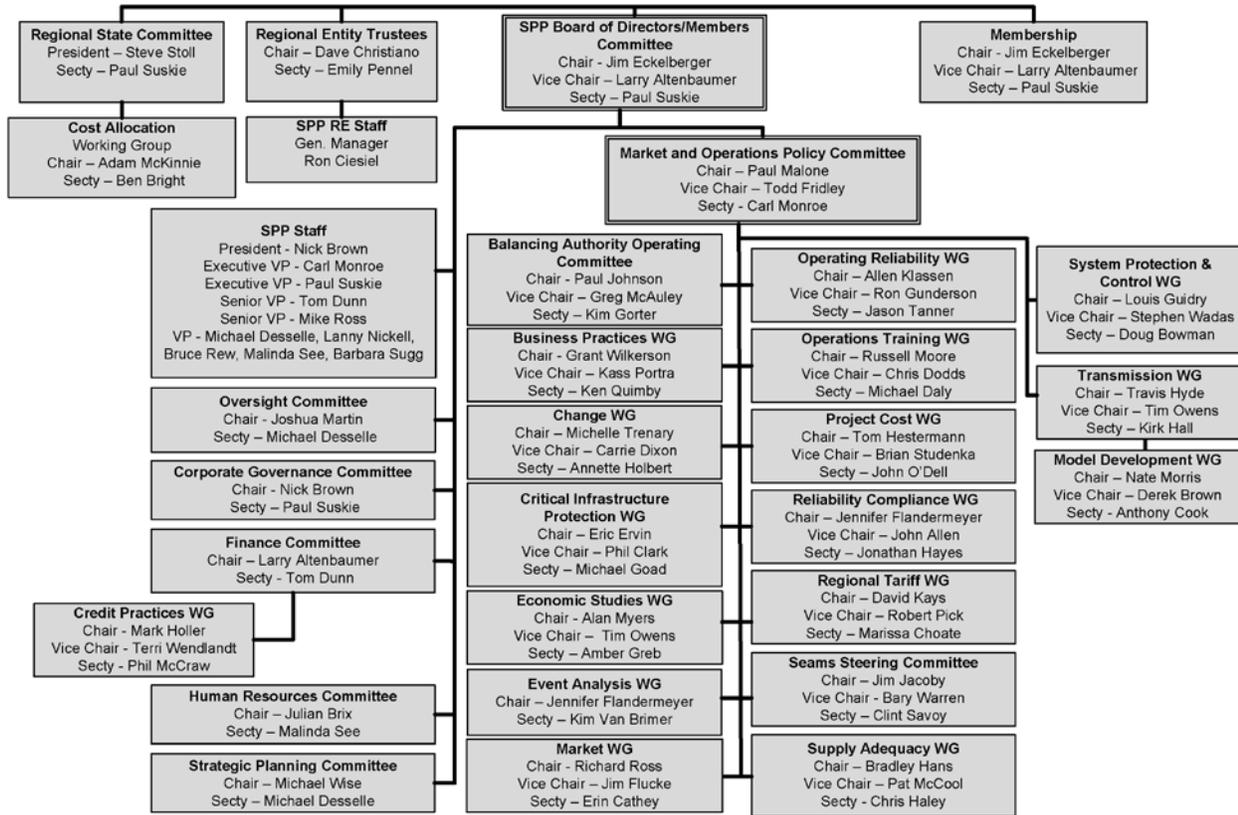
Primary responsibilities in the Process Integrity group include internal audit, reliability standards compliance, stakeholder services (including external member training and customer service), corporate project management, and interregional activities. Departments in this group work closely with the SPP Oversight Committee.

<b>2018 Priorities</b>	<b>Strategic Plan Linkage</b>
Compliance: performance of an internal mock audit to gauge effectiveness of SPP’s processes and procedures designed to comply with NERC CIP v5 standards	<ul style="list-style-type: none"> <li>• Reliability Assurance</li> <li>• Enhance Member Value</li> </ul>

APPENDIX A



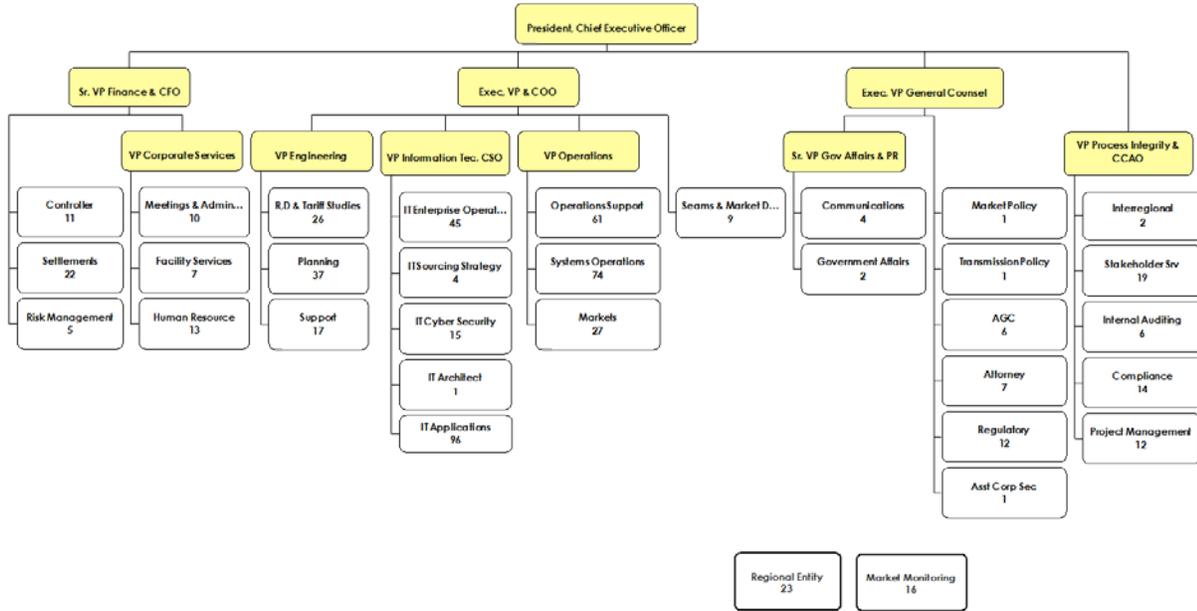
# Group Organizational Chart



Updated 08/14/17

**APPENDIX B**

**SPP Organizational Chart - September 19, 2017**  
**Officers with detailed headcount**  
**Full Headcount 616**



## Memorandum

**To:** SPP Finance Committee  
**From:** Tom Dunn  
**CC:**  
**Date:** September 26, 2017  
**Re:** Administrative Fee Billing Unit Change

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The SPP Finance Committee, at its June 13, 2017 meeting, directed SPP staff to begin conducting one on one discussions with SPP members regarding the proposed change to the basis for billing SPP's administrative fee. Carl Monroe and Tom Dunn were able to schedule visits with 7 members to discuss the proposal and solicit input. The members included public power, municipalities, investor owned, and power producers.

Each member visited expressed support for the concept with many citing the linkage between those who benefit from SPP's services with those who pay for SPP's services as the main reason for support. There was also near unanimous consensus for a rate that wasn't variable; a fixed rate similar to how SPP currently bills its administrative fee would be preferable to a rate that varied even though a fixed rate would give rise to more volatile over and under recoveries.

An issue raised which was unexpected was in the area of governance. The current governance structure is based on membership; and most payers of SPP's current administrative fees fit nicely into those that provide transmission or use transmission service. Under the proposed change, many entities who are not owners or users of transmission will be obligated to pay for SPP services but, because they are not members, will not really have a voice in SPP's governance.

The governance theme spread into questions about the appropriateness of SPP's other financial relations, specifically withdrawal obligations and annual membership fees. Are the withdrawal obligations fair for members who have do not participate in SPP's markets? Should the annual membership fee be raised to fully cover the cost of administering SPP's stakeholder process? No solutions were offered to address these concerns but those questioning encouraged SPP staff to evaluate the structure. Note that these were raised in the last Corporate Governance Committee meeting with their intent to start a discussion on these issues.

Two regulatory issues were raised dealing with recovery from retail customers and FERC approval. The retail recovery issue involved the SPP assumption that most utilities with retail customers would be able to include this cost in their fuel adjustment clause or simply as the cost of energy and benefit from automatic recovery under the existing rate regime. Several utilities indicated it may not be that easy. The FERC

concern was not unexpected. Opening a rate structure up to regulatory review always carries a level of risk. SPP's risk involves maintaining a single bundled rate charged to all customers. This structure is not consistent with the rate structures at the other multi-state ISO/RTOs. A risk for SPP is guidance from FERC to adopt a more complex rate recover scheme similar to other markets under FERC jurisdiction.

### **PATH FORWARD**

SPP staff suggests the following:

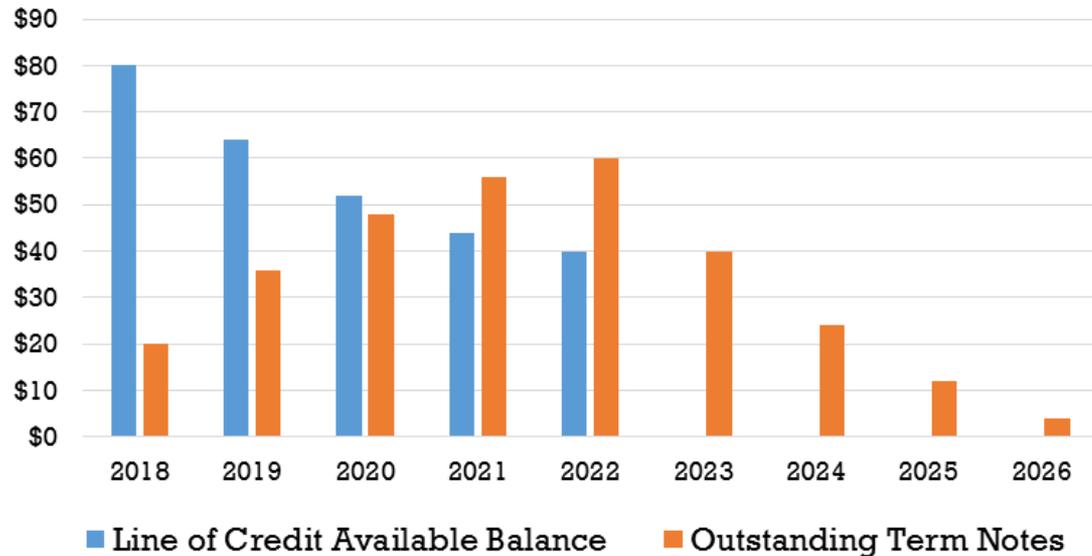
- 1) Follow the CGC effort to review SPP's governance and financial structures to ensure they continue to meet the needs of SPP in the future; identify any areas where change is beneficial and develop recommendation for the changes
- 2) Continue one on one discussions with members and customers, focusing on those who may oppose the proposed changes; develop scenarios to attain consensus
- 3) Develop timeline and milestones to implement change, considering potential additions to membership, product timing requirements, and changes to SPP's systems.

# IMPACTS OF 1A CHANGE

	Admin Fee Payment		Expected Change	
	Current	Proposed	Total Cost of Service	
IOU	\$ 21.3	\$ 7.8	\$	(0.8)
IOU	14.9	8.4		(2.1)
MUNI	1.7	1.2		(0.1)
PUBLIC	6.5	6.1		(0.3)
IOU	15.0	15.4		(0.2)
MUNI	1.7	1.5		(0.1)

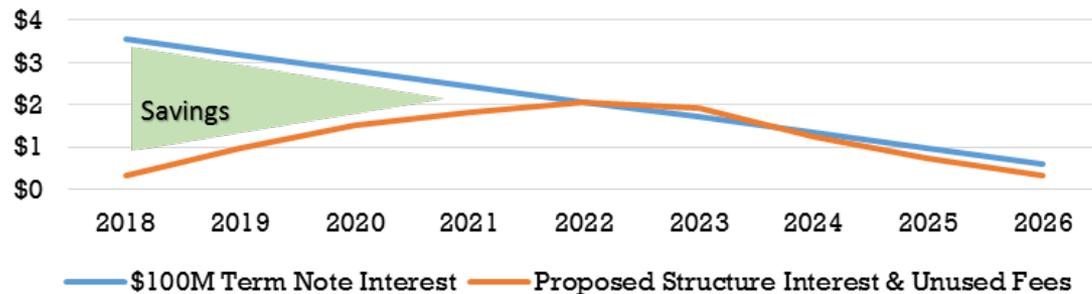
# Proposed Structure of Capex Funding

LC & Term Note Relationship  
(Millions of Dollars)



- \$100MM Committed
- Assume \$20MM Capex Annually
- Principal Payments Replenish LC
- 5-Year Term Notes

Comparison of Interest & Fees  
(Millions of Dollars)



# Proposed Structure of Capex Funding

Terms of Proposal	Bank A	Bank B	Bank C
<b>Commitment Amount</b>	Up to \$80,000,000	Up to \$100,000,000	Up to \$100,000,000 (Uncommitted)
<b>Master Note/Line of Credit</b>	Revolving Master Note; 5 Year Maturity	Non-Revolving Line of Credit; 5 Year Maturity	Private Placement Shelf Registration
<b>Term Notes</b>	Tranches Converted to Term Notes; 5 Year Maturity	Tranches Converted to Term Notes; Balloon Payments at End of 5 Year LC Maturity	8, 10, or 12 Year Maturities
<b>Master Note/Line of Credit Interest Rate</b>	LIBOR + 150bps; Floor 2.75%; Paid Quarterly	LIBOR + 125bps	None
<b>Master Note/Line of Credit Unused Fee</b>	0.125%; Paid Annually for 3 Years	0.150%	None
<b>Term Note Interest Rate</b>	Like-term Treasury + 185bps; Floor 2.875%	Floating LIBOR with Swap	Like-term Treasury + 100bps
<b>Term Note Fee</b>	\$1,875 Conversion Fee	\$3,500/Lender/Year	Optional Redemption – Make Whole + 50bps
<b>Origination Fee</b>	\$32,500	20bps ≥ \$40mm 15bps \$20mm Arrangement Fee \$162,500	60bps = \$600,000

## **HRC Minutes:**

The most notable change was to delegate committee responsibility for managing the 401(k) Investment Manager to the SPP Administrative Committee. The SPP Administrative Committee was appointed by the Board of Directors in 2014 to perform fiduciary functions of the Plan Administrator for both ERISA and non-ERISA plans. The Administrative Committee consists of the SPP CEO, General Counsel, CFO and Vice President, Corporate Services. The SPP Finance Committee has also made a change to their scope statement to delegate responsibility for managing the Defined Benefit Plan Investment Manager to the SPP Administrative Committee. These changes consolidate fiduciary responsibility for SPP Investment Managers. The SPP Administrative Committee will provide annual reports on investment manager performance to both the SPP HR and Finance Committees.

## **Email from Craig:**

Malinda and Tom

My recollection is that Malinda is out for a while. Best wishes on a speedy recovery.

I thought I would take a quick look to see if I could help distinguish between “settlor” functions, as we discussed, and “fiduciary” functions. See attached commentaries. Now, these commentaries are looking at this for a different purpose than what you are. The reason the commentaries are there is because someone questioned an action by an employer, alleging a breach of fiduciary duty. So the case law has developed that certain actions (settlor functions, which include the amendment of a plan), are not subject to ERISA’s fiduciary standard, whereas of course fiduciary functions are. In your case, we are not looking at the distinction for that purpose (though it doesn’t hurt to know this), but rather we are trying to determine what functions should be assigned to the administrative committee and what functions should be retained by the HR Committee or the Board. As I mentioned, I am not sure that the Board wants to retain authority over every little item in the 401(k) plan, such as whether to have plan loans, or hardship withdrawals. So here is an idea:

1. The admin committee becomes plan administrator (and therefore named fiduciary) of the retirement plan, and named fiduciary and plan administrator of the 401(k) plan, and has all authority with respect to the administration of the plans except for the determination of funding in the retirement plan.
2. The Board retains the ability to amend the retirement plan. With respect to the 401(k) plan, the Board retains the right to amend the formula for employer contributions.
3. The Finance Committee determines funding for the retirement plan.
4. The HR committee has the ability to amend any provision of the 401(k) plan other than the formula for employer contributions.

What do you think?

SPP Organizational Group Self-Evaluation/Assessment  
(August 2016 – July 2017)

**GROUP NAME:** Finance Committee

**CHARTER/SCOPE UPDATE:** Attached Charter/Scope has been reviewed: **Y** or N

**MEMBER ROSTER/ATTENDANCE:**

Member	Company	Sector	# Present	# Absent
Altenbaumer, Larry (C)	Director	N/A	7	0
Bennett, Sandra	American Electric Power	Investor-owned (TO)	7	0
Harrison, Kelly	Westar Energy, Inc.	Investor-owned (TO)	7	0
Kapustka, Laura	Lincoln Electric, Inc.	Municipal (TU)	7	0
*Scherr, Bruce	Director	N/A	7	0
*Skilton, Harry	Director	N/A	7	0
Wise, Mike	Golden Spread Electric	Cooperative (TU)	7	0
Dunn, Tom	Staff Secretary		7	0

\*Only on Committee for part of the assessment period.

List the number of members represented in the following areas:

Transmission/Owners	Transmission/Users	Director(s)
2	2	2

Sectors									
Investor Owned Utility	Cooperative	Municipal	State	Federal	Independent Power Producer/Marketer	Independent Transmission Company	Alt Power/Public Interest	Large Retail	Small Retail
2	1	1							

**AVERAGE OVERALL ATTENDANCE (INCLUDING NON-GROUP MEMBERS):** 18

**MEETINGS HELD TO DATE:** Live: 6 Teleconference: 1

**AVERAGE LENGTH OF MEETINGS:** 5:17

**NUMBER OF VOTES TAKEN:** 12

**\*MEETING COST(S):** \$63707.40

\* Meeting costs include hotel expenses (room rental, A/V, food and beverage), estimate of teleconference expenses, and Director fees for attendance.

## **MAJOR ACCOMPLISHMENTS/ISSUES ADDRESSED BY THE GROUP:**

1. Approved increase in maximum unsecured credit limit allowed for tariff customers to \$50 million, which will result in less collateral held to secure transactions for financially stable customers.
2. Approved change in investment policy statement for the SPP Retirement Plan assets to allow larger allocation to non-investment grade fixed income investments. Change enhances ability of investment manager to attain actuary projected long-term rate of return.
3. Approved change to Finance Committee Scope to move fiduciary responsibility engagement and oversight of investment managers hired to manage assets in the SPP Retirement Plan to the SPP Administrative Committee. This change serves to consolidate fiduciary responsibility for the benefit plans to a single committee.

## **MAJOR PENDING ISSUES BEFORE THE GROUP:**

1. Changes to recovery of SPP's costs. Evaluating change in recovery from only transmission customers to recovery from market participants
2. Cyber insurance to fund SPP's recovery and liability in the event its systems are breached.
3. Long-term financing plan to ensure SPP has appropriate financing capacity to meet its needs over the next 5+ years.



<b>RESPONSIBILITY</b>	<b>FREQUENCY</b>	<b>LAST</b>
<b>APPROVAL</b>		
Assumptions for pension plan actuary calculations	Annually	Dec-16
Significant financial and compliance policies under FC purview	Annually	Apr-16
<b>MONITOR</b>		
Cost recovery methodology ensuring equity for members	As Needed	
Legal matters impacting corporate financial statements	As Needed	
Major financial risk exposures and mitigation actions	As Needed	
Adequacy of internal controls and resolution of identified weaknesses	Annually	Dec-16
Investment policy statement for pension plan	Annually	Jun-17
Pension plan and post-retirement healthcare plan fund performance	Annually	Jun-17
<b>RECOMMEND TO BOARD OF DIRECTORS</b>		
Issuance of notes	As Needed	Dec-13
Annual operating, capital and other budgets	Annually	Dec-16
Rates for Schedule 1A and member assessments	Annually	Dec-16
Approval of Annual Financial Statement Audit Report	Annually	Apr-17
Funding for pension and post-retirement healthcare plans	Annually	Apr-17
Engagement of independent financial auditors	Annually	Apr-17
<b>REPORT TO BOARD OF DIRECTORS</b>		
Issues of quality or integrity of corporate financial statements	As Needed	
Legal or regulatory compliance matters	As Needed	Jun-17
Independent auditor performance	Annually	Apr-17
Financial results compared to budget	Each Meeting	Jun-17
Financial status of defined benefit and post-retirement healthcare plans	Annually	Apr-17



**Southwest Power Pool  
FINANCE COMMITTEE  
Organizational Group Scope Statement**

**Purpose:**

The purpose of the Finance Committee is to oversee all aspects of SPP's finances and financial operations, primarily insuring appropriate controls, policies and procedures are documented and adhered to allowing SPP to report accurate financial reports, access external capital as required, while not exposing the company or its membership to undue risks.

**Scope of Activities:**

The Committee, in discharging its oversight role, is empowered to study or investigate any matter of interest or concern that the Committee deems appropriate. In this regard, the Committee shall have the authority to retain outside legal, accounting or other advisors for this purpose, including the authority to approve the fees payable to such advisors and any other terms of retention. The Committee is directly responsible for oversight of the work (including both audit and non-audit services) of the independent financial, controls, and benefit plan auditors. The Committee will recommend engagement and compensation of the independent auditors to the SPP Board of Directors. The Committee shall be given full access to the corporation's accounting staff, Board of Directors, corporate executives and independent accountants as necessary to carry out these responsibilities.

The Committee will have responsibility to approve, monitor/review, recommend, and report, as follows:

**Approve:**

- Annually, significant financial and compliance policies which fall under the purview of the Committee
- Annually, the basic assumptions used by SPP's actuary to determine the financial status and funding requirements of SPP's pension and post-retirement healthcare plans. These basic assumptions include, but are not limited to, discount rate, investment rate of return, rate of compensation change, and mortality tables utilized. The Committee will report these assumptions to the SPP Board of Directors.
- Annually, the Investment Policy Statements for the Company's retirement plan and post-retirement healthcare plan to ensure the Investment Policy Statements continue to be appropriate for the goals of the plans

**Review/Monitor:**

- The methodology of cost recovery to insure continuing equity for Members
- Any legal matter that could have a significant impact on the corporation's financial statements
- The adequacy of internal financial controls and the resolution of any identified material weaknesses or reportable conditions
- The corporation's guidelines and policies with respect to risk assessment and risk management focusing on the corporation's major financial risk exposures and the steps management has taken to monitor and control such exposures
- The structure of the Company's corporate liability insurance program, including review of retentions, insurance limits and exceptions, quality of underwriters, and activities of the broker(s) engaged to represent the Company to the insurance markets
- Annually, the investment performance of the pension and/or post-retirement healthcare plan assets and compliance with the approved Investment Policy Statements for the plans
- Policies for management of the company's capitalization, financing and long-term contracts

- At least annually, the performance of the Committee and its members, including reviewing the compliance of the Committee with this Charter

**Recommend to the Board of Directors:**

- Annually, an operating budget, capital budget and each special budget for the upcoming fiscal year
- Annually, rates to be charged under Schedule 1A and for the assessment of members
- Annually, the corporation's audited financial statements as the corporate record of financial results for the prior fiscal year. The Committee shall review and discuss with management and the independent auditors, prior to public dissemination, the corporation's annual audited financial statements with primary focus on the quality and integrity of the statements
- Annually, the engagement of independent auditors to audit the corporation's annual financial statements, benefit plan financial statements, and controls environments.
- Annually, contributions to SPP's pension and post-retirement healthcare plans
- As needed, issuance of notes to fund capital expenditures, liquidity, and other general corporate purpose

**Report to the Board of Directors:**

- All actions taken by the Committee
- Any issues regarding the quality or integrity of the corporation's financial statements, compliance with legal or regulatory requirements, or the performance and independence of the corporation's independent financial and controls auditors
- Financial results with comparisons to budget
- Any other matters relevant to the Committee's discharge of its responsibilities

The Committee is not responsible for certifying the corporation's financial statements or guaranteeing the auditor's report. The fundamental responsibility for the corporation's financial statements and disclosures rests with management.

**Representation:**

The Finance Committee shall be comprised of up to six members. Two representatives shall be members of the Board of Directors and one of these will be the chairperson. Two representatives from the Transmission Owning Member sector as nominated by the Corporate Governance Committee and two representatives from the Transmission Using Member sector as nominated by the Corporate Governance Committee. The Board of Directors shall appoint their representatives at the regular meeting of the Board of Directors immediately following the Annual Meeting of Members. Persons designated as representatives on the Finance Committee will continue to serve until their successors have been appointed. Where a vacancy occurs, the Corporate Governance Committee will fill the vacancy in accordance with SPP Bylaws.

**Duration:**

The Finance Committee is a permanent committee. The Committee shall meet a minimum of two times per fiscal year and at other times as called by the Chair. A quorum will constitute at least half of the members of the Committee but no less than three members. Proxies are allowed if reported to the Chair prior to the meeting. All meetings of the Finance Committee shall be open to all interested parties unless closed by the Chair of the Committee.

**Reporting:**

The Finance Committee reports directly to the Board of Directors.

Monthly Financial Reporting Package  
August 2017

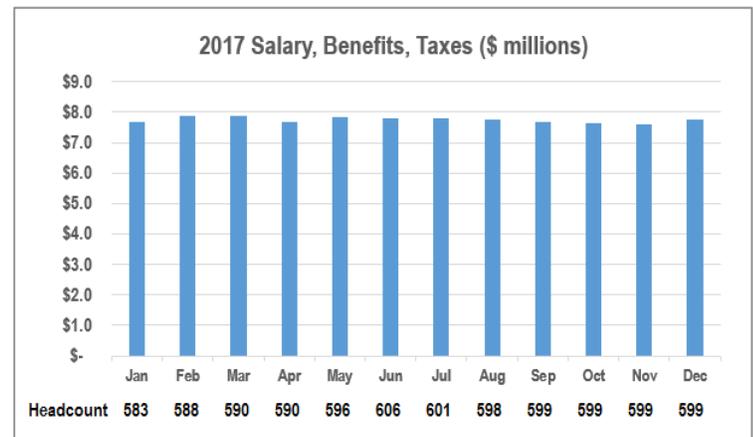
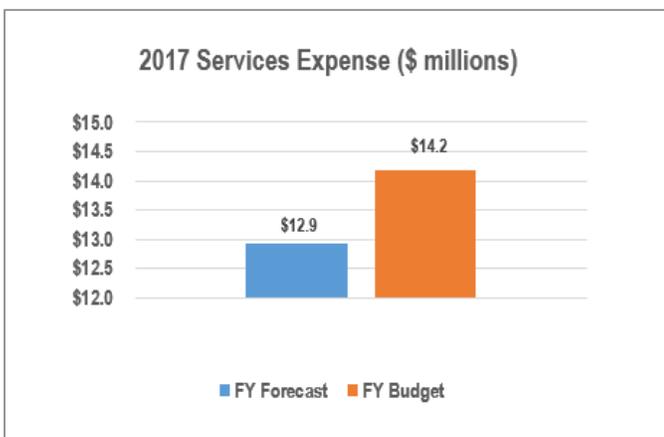
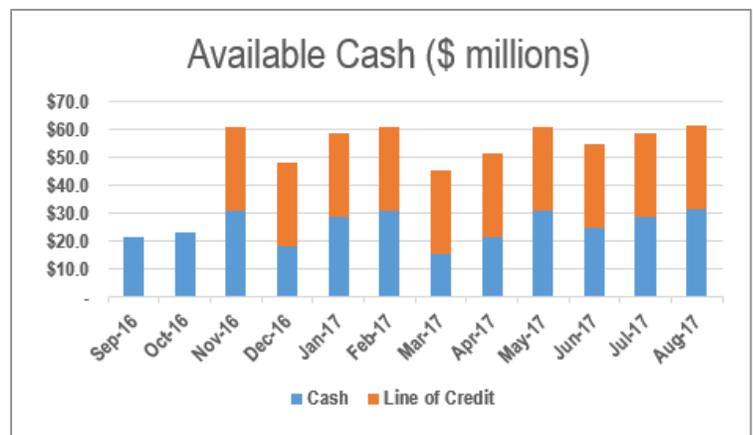
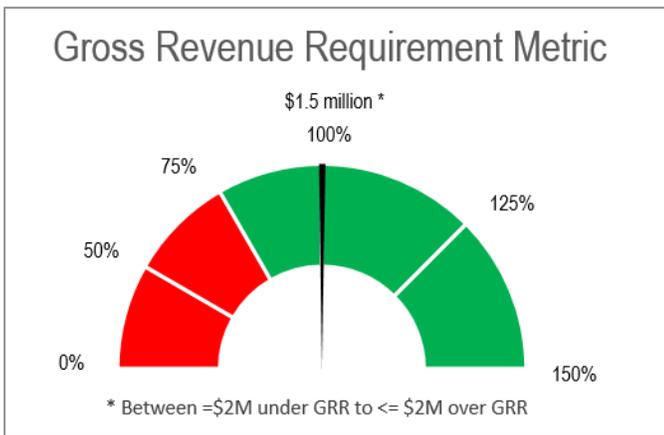
# SPP Executive Summary – August 2017

## 2017 Over / (Under) Recovery

Cost Recovery (\$ millions)	2017 Forecast	2017 Budget	Fav/ (Unfav)
Gross Revenue Requirement (GRR) *	\$161.0	\$161.3	\$0.3
Net Revenue Requirement (NRR)	160.9	160.5	(0.4)
Admin Fee Revenue	162.4	160.5	1.9
Over / (Under) Recovery	\$1.5	(\$0.0)	\$1.5

\* GRR for HR metric excludes FERC fees and Regional Entity expenses

## GRR & Available Cash, Compensation and Outside Services Expenses



**Southwest Power Pool**  
**2017 Financial Commentary**  
**August 31, 2017**  
*(in thousands)*

**Summary**

	2017 FY Forecast	2017 FY Budget	Fav/(Unfav) Variance	
Revenues	\$194,829	\$194,103	\$726	0.4%
Expenses	195,792	196,360	568	0.3%
Net Income/(Loss)	<u>(\$964)</u>	<u>(\$2,257)</u>	<u>\$1,294</u>	57.3%

**Revenue**

	2017 FY Forecast	2017 FY Budget	Fav/(Unfav) Variance	
Tariff Administration Service	\$162,364	\$160,482	\$1,882	1.2%
FERC Fees & Assessments	16,124	16,750	(626)	(3.7%)
NERC ERO Regional Entity Rev	9,995	10,790	(795)	(7.4%)
Miscellaneous Income	5,243	4,959	284	5.7%
Contract Services Revenue	533	533	-	-
Annual Non-Load Dues	570	588	(18)	(3.1%)
Total Revenue	<u>\$194,829</u>	<u>\$194,103</u>	<u>\$726</u>	0.4%

Higher than expected monthly peaks during the 4th quarter of 2016 caused 2017 billing units for network service to exceed budget levels and results in additional Tariff Administrative Service revenue for 2017.

FERC Fees Assessments revenue reflects the current rate charged under Schedule 12 for 2017, which is \$0.062 as compared to \$0.064 assumed in the budget.

NERC ERO Regional Entity Operating expenses in the RE are below budget resulting in lower revenue recognition. The RE is functioning with four fewer staff positions than expected and has decreased the need for legal and consulting engagements due to lower number of violations. These lower expenses result in a \$0.1 million adverse impact to SPP's net revenue requirement.

Miscellaneous Income includes engineering studies revenue, MISO settlement revenues, and revenues related to the pass-thru costs of the FERC Order 1000 process. According to the agreement reached with the transmission owners regarding allocation of MISO revenues, SPP was allocated an additional \$0.7 million as a result of the resettlement of historical periods prior to 2016. Engineering study activities have steadily increased and associated revenues are expected to exceed budget (\$0.5 million). Other items reflected in the forecast but not in the budget include revenue for purchase and sales tax rebates (\$0.2 million) and reimbursements from RTOs for conferences and membership expansion studies (\$0.1 million). Since no projects are expected to go through the bidding process this year, pass-thru revenues and expenses of \$1.2 million associated with FERC Order 1000 were removed from the forecast and partially offset the favorable variances in miscellaneous income.

**Southwest Power Pool**  
**2017 Financial Commentary**  
**August 31, 2017**  
*(in thousands)*

Expense				
	2017 FY Forecast	2017 FY Budget	Fav/(Unfav) Variance	
Salary & Benefits	\$93,009	\$91,316	(\$1,694)	(1.9%)
Assessments & Fees	21,663	18,600	(3,063)	(16.5%)
Communications	3,664	4,207	543	12.9%
Maintenance	16,670	17,964	1,295	7.2%
Outside Services (Including RSC)	13,155	14,455	1,300	9.0%
Administrative	4,790	5,263	473	9.0%
Travel & Meetings	3,078	3,257	179	5.5%
Depreciation	29,143	30,485	1,342	4.4%
Other Expenses	10,621	10,813	192	1.8%
Total Expense	\$195,792	\$196,360	\$568	0.3%

Incremental out-of-budget positions and lower vacancy rate contribute to the unfavorable variance in Salary & Benefits. Five incremental compliance positions were vetted and approved by SPP Officers and Board of Directors in January 2017. Three incremental operator-in-training positions were approved in April to accommodate restructuring of staff related to upcoming retirements

The budget assumed a vacancy rate of 5% based on historical trends. The 5% vacancy rate was equivalent to an average monthly headcount of 580. Headcount exceeded the budgeted target of 580 beginning in January. Active positions total 606 beginning in June and are expected to remain relatively constant throughout the rest of the year. The lower than anticipated vacancy rate results in higher forecast costs as compared to the budget.

Assessments and Fees is considerably higher than the original budget. SPP received the annual assessment invoice from FERC in June. The forecast includes a true-up for the prior year under-accrual, which is a result of an increase in FERC's charge factor (6%) and SPP transmission sales (4%). The forecast was also updated to reflect the revised estimate for 2017 activity that will be invoiced in 2018.

Communications expense trails budget due to favorable contract negotiations and renewal credits resulting in lower expense for the year.

The favorable variance in Maintenance is mainly driven by successful negotiation of terms/pricing for contract renewals on equipment maintenance, as well as delays and/or deferrals of capital spending that drive incremental maintenance.

The favorable variance in Outside Services expense is primarily related to removing FERC Order 1000 industry expert panel costs from the forecast, which is offset by a decrease in Miscellaneous Income with no impact to the net revenue requirement. There are various other favorable and unfavorable factors that are individually immaterial to the overall variance.

Other Expense includes interest expense, capitalized interest, investment income, interest rate swap valuation adjustments, and various other income and expense amounts. Due to the unpredictability, the only amounts budgeted in this category are interest expense and capitalized interest.

Interest expense is associated with debt issuances used for capital expenditures. The budget assumed new debt issuances in 2017 to meet SPP's capital spending needs; however, cash flow projections indicate no need for additional funding until 2018 which results in a \$0.8 million favorable variance for 2017. The favorable valuation adjustments (\$1.3 million) are non-cash items and are not reflected in the net revenue requirement (NRR) recovery calculation.

Litigation resulting in \$1.6 million in fees was not included in the budget and serves as an offset to the favorable variance.

**Southwest Power Pool**  
**Monthly Financial Overview**  
**August 31, 2017**  
*(in thousands)*

	Actual Jan-17	Actual Feb-17	Actual Mar-17	Actual Apr-17	Actual May-17	Actual Jun-17	Actual Jul-17	Actual Aug-17	Forecast Sep-17	Forecast Oct-17	Forecast Nov-17	Forecast Dec-17	FY 2017 Forecast	FY 2017 Budget	Variance Fav/(Unfav)	FY 2016 Actual	Variance Fav/(Unfav)
<b>Income</b>																	
Tariff Administrative Service	\$13,528	\$12,923	\$13,508	\$12,962	\$13,769	\$13,432	\$13,976	\$13,948	\$13,532	\$13,587	\$13,440	\$13,759	\$162,364	\$160,482	\$1,882	\$144,546	\$17,817
Fees & Assessments	2,718	2,212	2,049	2,066	1,935	2,397	2,142	2,538	2,385	2,230	2,046	1,971	26,689	28,128	(1,439)	26,918	(229)
Contract Services Revenue	44	44	44	44	44	44	44	44	44	44	44	44	533	533	-	529	4
Miscellaneous Income	430	1,296	492	191	606	372	492	366	250	250	250	250	5,243	4,959	284	4,602	641
<b>Total Income</b>	<b>16,720</b>	<b>16,477</b>	<b>16,093</b>	<b>15,263</b>	<b>16,354</b>	<b>16,245</b>	<b>16,654</b>	<b>16,896</b>	<b>16,212</b>	<b>16,111</b>	<b>15,780</b>	<b>16,024</b>	<b>194,829</b>	<b>194,103</b>	<b>726</b>	<b>176,595</b>	<b>18,234</b>
<b>Expense</b>																	
Salary & Benefits	7,669	7,866	7,899	7,693	7,831	7,794	7,814	7,753	7,664	7,653	7,613	7,760	93,009	91,316	(1,694)	90,186	(2,824)
Employee Travel	101	177	149	161	200	185	160	171	183	194	180	162	2,023	2,245	222	1,919	(105)
Administrative	229	346	292	537	329	501	472	335	340	772	261	375	4,790	5,263	473	4,764	(25)
Assessments & Fees	1,550	1,550	1,550	1,550	1,550	1,550	3,917	1,689	1,689	1,689	1,689	1,689	21,663	18,600	(3,063)	18,648	(3,014)
Meetings	44	124	70	98	96	123	165	32	72	119	63	50	1,054	1,012	(43)	974	(81)
Communications	313	315	329	328	245	297	299	287	303	303	303	343	3,664	4,207	543	3,915	250
Maintenance	1,117	1,223	1,245	1,369	1,303	1,398	1,321	1,178	1,542	1,614	1,580	1,778	16,670	17,964	1,295	14,775	(1,895)
Services	771	1,302	1,179	1,226	1,338	930	882	900	765	1,110	1,122	1,393	12,918	14,184	1,265	14,847	1,928
Regional State Committee	9	20	24	15	20	11	7	23	27	27	27	27	237	272	35	220	(17)
Depreciation	4,724	4,705	1,905	1,879	1,893	1,857	1,735	1,847	2,115	2,161	2,177	2,145	29,143	30,485	1,342	58,025	28,882
<b>Total Expense</b>	<b>16,528</b>	<b>17,628</b>	<b>14,642</b>	<b>14,856</b>	<b>14,806</b>	<b>14,647</b>	<b>16,773</b>	<b>14,215</b>	<b>14,700</b>	<b>15,642</b>	<b>15,014</b>	<b>15,721</b>	<b>185,171</b>	<b>185,547</b>	<b>375</b>	<b>208,272</b>	<b>23,100</b>
<b>Other Income/(Expense)</b>																	
Investment Income	4	4	39	4	4	40	4	5	-	-	-	-	105	-	105	191	(86)
Interest Expense	(874)	(882)	(876)	(863)	(858)	(863)	(842)	(846)	(840)	(828)	(822)	(826)	(10,221)	(10,871)	650	(10,807)	586
Capitalized Interest	-	-	48	-	-	-	-	-	-	-	-	-	48	58	(10)	121	(73)
Change in Valuation of Swap	-	-	259	-	-	17	-	-	-	-	-	-	276	-	276	682	(406)
Other Income/Expense	61	73	29	44	(1,555)	71	76	29	-	-	-	(500)	(1,671)	-	(1,671)	(421)	(1,250)
Unrealized Gain on Investment	143	294	(14)	91	116	7	174	32	-	-	-	-	843	-	843	649	194
<b>Net Other Income (Expense)</b>	<b>(666)</b>	<b>(511)</b>	<b>(514)</b>	<b>(725)</b>	<b>(2,293)</b>	<b>(729)</b>	<b>(587)</b>	<b>(780)</b>	<b>(840)</b>	<b>(828)</b>	<b>(822)</b>	<b>(1,326)</b>	<b>(10,621)</b>	<b>(10,813)</b>	<b>192</b>	<b>(5,588)</b>	<b>(5,033)</b>
<b>Net Income (Loss)</b>	<b>(\$473)</b>	<b>(\$1,662)</b>	<b>\$936</b>	<b>(\$317)</b>	<b>(\$745)</b>	<b>\$869</b>	<b>(\$705)</b>	<b>\$1,901</b>	<b>\$671</b>	<b>(\$359)</b>	<b>(\$56)</b>	<b>(\$1,023)</b>	<b>(\$964)</b>	<b>(\$2,257)</b>	<b>\$1,294</b>	<b>(\$37,265)</b>	<b>\$36,301</b>
<b>2017 Headcount</b>																	
Approved Budgeted Positions	609	609	610	611	610	610	610	610	610	610	610	610	610	610		599	
Headcount (Incl. Vacancies)	583	588	590	590	596	606	601	598	599	599	599	599	599	580		581	
Total Positions (Active/Open)	613	618	618	621	621	621	621	616	616	616	616	616	616	610		609	
Vacancy Run rate	5%	4%	4%	5%	4%	2%	3%	3%	3%	3%	3%	3%	4%	5%		5%	
NRR Over / (Under) Recovery	\$3,061	(\$3,023)	\$2,309	\$1,137	\$265	(\$3,115)	\$2,808	\$2,584	(\$3,058)	\$1,441	\$1,402	(\$4,320)	\$1,492	-		(\$7,079)	

Southwest Power Pool  
Current Month Financial Overview  
August 31, 2017  
(in thousands)

	Current Month Compared to Forecast			YTD Actual Compared to YTD Budget			FY Forecast Compared to FY Budget		
	Aug-2017 Actual	Aug-2017 Forecast	Variance Fav/(Unfav)	Aug-2017 Actual	Aug-2017 Budget	Variance Fav/(Unfav)	FY 2017 Forecast	FY 2017 Budget	Variance Fav/(Unfav)
<b>Income</b>									
Tariff Administrative Service	\$13,948	\$13,782	\$166	\$108,046	\$106,988	\$1,058	\$162,364	\$160,482	\$1,882
Fees & Assessments	2,538	2,467	71	18,056	18,948	(892)	26,689	28,128	(1,439)
Contract Services Revenue	44	44	-	355	355	-	533	533	-
Miscellaneous Income	366	250	116	4,244	3,306	938	5,243	4,959	284
<b>Total Income</b>	<b>16,896</b>	<b>16,543</b>	<b>353</b>	<b>130,702</b>	<b>129,598</b>	<b>1,104</b>	<b>194,829</b>	<b>194,103</b>	<b>726</b>
<b>Expense</b>									
Salary & Benefits	7,753	7,681	(72)	62,319	61,274	(1,045)	93,009	91,316	(1,694)
Employee Travel	171	174	3	1,304	1,494	189	2,023	2,245	222
Administrative	335	341	6	3,042	3,093	51	4,790	5,263	473
Assessments & Fees	1,689	1,689	-	14,906	12,400	(2,506)	21,663	18,600	(3,063)
Meetings	32	25	(6)	752	720	(32)	1,054	1,012	(43)
Communications	287	303	16	2,413	2,805	391	3,664	4,207	543
Maintenance	1,178	1,312	134	10,155	12,086	1,931	16,670	17,964	1,295
Services	900	1,026	126	8,528	9,489	961	12,918	14,184	1,265
Regional State Committee	23	33	10	130	181	52	237	272	35
Depreciation	1,847	2,072	226	20,545	21,856	1,311	29,143	30,485	1,342
<b>Total Expense</b>	<b>14,215</b>	<b>14,658</b>	<b>444</b>	<b>124,095</b>	<b>125,397</b>	<b>1,302</b>	<b>185,171</b>	<b>185,547</b>	<b>375</b>
<b>Other Income/(Expense)</b>									
Investment Income	5	-	5	105	-	105	105	-	105
Interest Expense	(846)	(844)	(1)	(6,904)	(7,086)	181	(10,221)	(10,871)	650
Capitalized Interest	-	-	-	48	58	(10)	48	58	(10)
Change in Valuation of Swap	-	-	-	276	-	276	276	-	276
Other Income/Expense	29	-	29	(1,171)	-	(1,171)	(1,671)	-	(1,671)
Unrealized Gain on Investment	32	-	32	843	-	843	843	-	843
<b>Net Other Income (Expense)</b>	<b>(780)</b>	<b>(844)</b>	<b>64</b>	<b>(6,804)</b>	<b>(7,028)</b>	<b>224</b>	<b>(10,621)</b>	<b>(10,813)</b>	<b>192</b>
<b>Net Income (Loss)</b>	<b>\$1,901</b>	<b>\$1,040</b>	<b>\$861</b>	<b>(\$197)</b>	<b>(\$2,827)</b>	<b>\$2,630</b>	<b>(\$964)</b>	<b>(\$2,257)</b>	<b>\$1,294</b>
Headcount	598	599	(1)	598	610	(12)	616	610	6

Southwest Power Pool  
Balance Sheet  
August 31, 2017  
*(in thousands)*

	<u>8/31/2017</u>	<u>12/31/2016</u>	<u>Net Change</u>
<b>ASSETS</b>			
<b>Current Assets</b>			
Cash & Equivalents	\$74,014	\$75,715	(\$1,701)
Restricted Cash Deposits	287,057	223,964	63,093
Accounts Receivable (net)	32,993	63,702	(30,709)
Other Current Assets	13,912	9,291	4,621
<b>Total Current Assets</b>	<b>\$407,976</b>	<b>\$372,671</b>	<b>\$35,304</b>
Total Fixed Assets	78,671	92,690	(14,020)
Total Other Assets	2,314	4,628	(2,314)
Investments	17,561	10,835	6,726
<b>Total Assets</b>	<b>\$506,522</b>	<b>\$480,825</b>	<b>\$25,697</b>
<b>LIABILITIES &amp; EQUITY</b>			
<b>Liabilities</b>			
<b>Current Liabilities</b>			
Accounts Payable (net)	\$30,673	\$66,927	(36,254)
Customer Deposits	304,053	223,964	80,089
Current Maturities of LT Debt	23,310	23,227	84
Other Current Liabilities	47,842	54,310	(6,468)
Line of Credit	-	-	-
Deferred Revenue	3,163	5,127	(1,964)
<b>Total Current Liabilities</b>	<b>409,042</b>	<b>373,554</b>	<b>35,487</b>
<b>Long Term Liabilities</b>			
Long-Term Debt	224,335	235,050	(10,715)
Capital Lease Obligation	2,446	3,856	(1,411)
Other Long Term Liabilities	37,577	35,044	2,532
<b>Total Long Term Liabilities</b>	<b>264,358</b>	<b>273,951</b>	<b>(9,593)</b>
Net Income	(197)	(37,265)	37,068
Members' Equity	(166,680)	(129,415)	(37,265)
<b>Total Members' Equity</b>	<b>(166,877)</b>	<b>(166,680)</b>	<b>(197)</b>
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>\$506,522</b>	<b>\$480,825</b>	<b>\$25,697</b>

Southwest Power Pool  
Headcount Analysis  
August 31, 2017

	Current Month Actual vs. Budget			Year End Forecast vs. Budget		
	Actual Aug-17	Budget Aug-17	Over/(Under) Budget	2017 Forecast	2017 Budget	Over/(Under) Budget
Administration	49	50	(1)	49	50	(1)
Process Integrity	46	52	(6)	53	52	1
Operations	160	158	2	162	158	4
Information Technology	160	156	4	161	156	5
Engineering	78	80	(2)	80	80	0
Regulatory Policy & General Counsel	24	27	(3)	27	27	0
Corporate Services	29	30	(1)	30	30	0
Market Monitoring	14	16	(2)	16	16	0
Market Design	6	6	0	6	6	0
Interregional Relations	3	3	0	3	3	0
Communications & Gov't Affairs	6	6	0	6	6	0
SPP Regional Entity	23	28	(5)	23	28	(5)
Open Positions / Adjustments	0	(2)	2	0	(2)	2
<b>Total Headcount</b>	<b>598</b>	<b>610</b>	<b>(12)</b>	<b>616</b>	<b>610</b>	<b>6</b>

Headcount changes:

2017 Approved positions	612
Unidentified positions to be eliminated	(2)
<b>2017 Budgeted positions</b>	<b>610</b>
Incremental out-of-budget positions	8
Removal of RE open positions	(5)
Added unidentified eliminations	3
<b>2017 Current total positions</b>	<b>616</b>

Notes: Five incremental out-of-budget positions in IT and compliance were approved in early 2017. Three out-of-budget operator-in-training positions were approved in April 2017 in anticipation of organizational changes as a result of upcoming retirements. Five open positions within the Regional Entity were removed from the forecast.

The 2017 budget included two unidentified eliminations carried over from the 2016 budget and the elimination of one operator-in-training position. The positions have been added back to the forecast as a result of recent developments with the Regional Entity.

**Unbudgeted Report**  
**June 6 thru September 15, 2017**

PO Number	Project Name	Vendor Name	Scope of Work/Item Description	Total Amount	Budgeted	Unbudgeted	Notes
PO2017-1519	RHEL 7 EMS & Markets Upgrade	ALSTOM Grid LLC	Additional Funds to Complete Project	\$186,150.00	-	\$186,150	(A)
PO2017-1488	Market Monitoring Support Renewal	Monitoring Analytics	Extension to Support Agreement	\$230,500.00	115,250.00	\$115,250	(B)

(A) The project included multiple phases, with initial/earlier phases having been previously approved within budget. This particular requisition is for the additional funding of \$186k to complete the remainder of the project work. While the requested funding is within total project cost expectations, the requisition was submitted as “unbudgeted” due to a timing misalignment associated with the IT Foundation budget (i.e funds were included in the 2016 IT Foundation Budget).

(B) The original PO was from January 1, 2017 until June 30, 2017 for \$115,250. We determined the need to extend the PO until the end of the year when development of the replacement solution was delayed several months. The PO was reissued for the revised estimated total which included the original amount and the incremental \$115,250 for the extension of support from the current vendor.

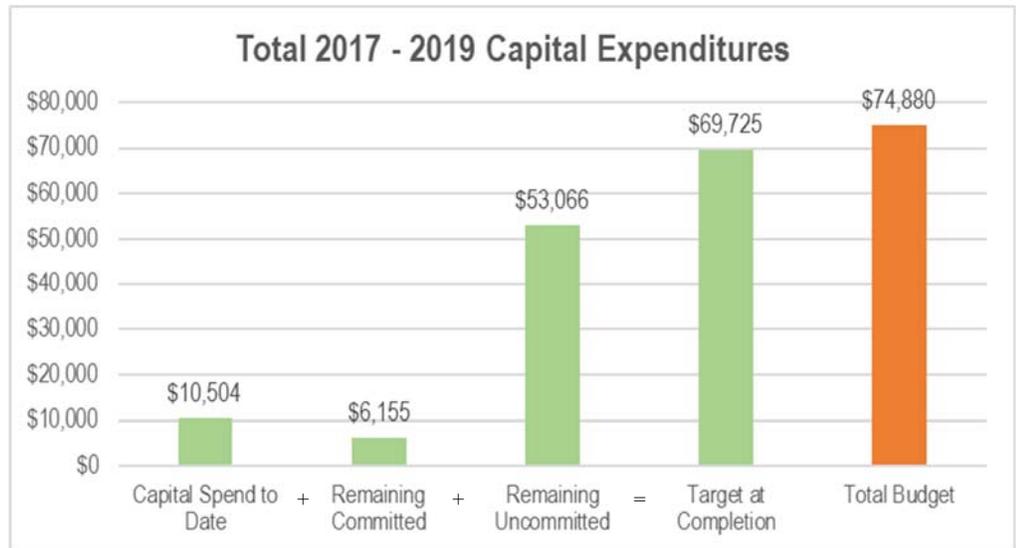
Quarterly Capital Project Review  
June 2017

# Total Capital Expenditures

The 2017 budget identifies capital expenditures totaling \$74.9 million, which includes \$66.3 million for 2017 – 2019 and \$8.6 million for forecasted spend thru 2016 for carryover projects. These projects represent investments in various initiatives requested by stakeholders, driven by compliance initiatives, intended to improve and strengthen information technology and operational efficiency and effectiveness, or to replace expired assets.

The capital spend to date column reflects \$6.1 million of prior year actual spend for carryover projects including Enhanced Combined Cycle – Gas Day (\$4.9 million), PMU Data Exchange (\$0.8 million) and various others (\$0.4 million). Foundation projects do not include any prior year expenditures.

The remaining committed column reflects amounts outstanding on active purchase orders and/or submitted requisitions. The remaining uncommitted column reflects expected remaining costs that do not already have a submitted requisition and/or purchase order.



The total projected spend for all capital expenditures is expected to be \$5.2 million under budget. The variance to budget consists of a \$4.7 million favorable variance related to projects, \$0.8 million favorable variance related to Operations foundation and \$0.3 million unfavorable variance in IT foundation.

Total 2017 - 2019 Capital Expenditures					
(\$ thousands)	Capital Spend to Date	Remaining Committed	Remaining Uncommitted	Target at Completion	Total Budget
Multi-Year Projects Over \$1 Million	\$7,024	\$602	\$8,890	\$16,516	\$20,691
Short-Term Projects Less Than \$1 Million	760	788	1,541	3,089	3,816
Future Projects Less Than \$1 Million	0	0	2,904	2,904	2,661
Information Technology Foundation	1,706	1,094	35,961	38,761	38,447
Operations, Facilities & Settlements Foundation	1,014	3,671	3,770	8,456	9,265
<b>Total</b>	<b>\$10,504</b>	<b>\$6,155</b>	<b>\$53,066</b>	<b>\$69,725</b>	<b>\$74,880</b>

# Multi-Year Projects Over \$1 Million

Projects included are those estimated to exceed \$1.0 million in total capital cost and expected to be completed over multiple years.

Enhanced Combined Cycle – Gas Day The Gas Day aspect of this project was completed and installed as planned on 9/30/2016, and ECC was completed and activated as planned on 3/1/2017. The total capital cost to complete the project was \$1.7 million under budget. Combining the Gas Day and ECC projects into a single project produced efficiency gains and a quicker resolution of the market clearing engine (MCE) performance issues.



## Settlements Systems

Replacements – The project objective is the successful design, development, and implementation of a market and transmission settlements system. The foundational requirements include support of market settlements daily, weekly and annual processes; and support of transmission settlements daily, monthly and resettlement processes. The project began in April 2017 and the completion of milestone one is scheduled for July 31<sup>st</sup>. The first delivery of the software (“Formula Builder”) occurred in mid-July and is in the initial testing phase. The primary function of this software component was to ensure the development testing environment is properly established.

TTSE Dispatcher Training Simulator – This is a three-phased project to create a more realistic simulator environment dedicated to SPP Operations training. Phase 1 which included expanding the Maumelle training facilities, enhancing the dispatcher training simulator (DTS), and creating an operations dedicated DTS environment was completed in 2016 at a cost of \$0.2 million. Phase 2 will incorporate the market system and additional data such as load and wind forecasts. This phase is currently underway and is scheduled to be completed in 2017. Phase 3 includes the addition of visualization tools (Genview, Flowgate Exploder, etc.) and is tentatively scheduled to take place in 2018.

PMU Data Exchange, Phase 1-3 – Phase 1 of this multi-phase project is underway and includes developing, testing, and deploying the PMU systems; and analyzing and validating PMU data streams from external parties. Phases 2 and 3 are member-driven based on an assessment of the current and near-term future state of PMU capabilities and data utilization. Therefore, Phases 2 and 3 have been removed from the current forecast and will be re-submitted as needed in the future. The \$2.4 million favorable variance to budget is the result of removing the planned expenditures of Phases 2 and 3 as well as lower than expected capital costs for Phase 1.

Online Voltage Stability Analysis Tool (VSAT) – VSAT will be used to determine the security of the current system state and forecast future states for a large number of contingencies enabling SPP to meet multiple challenges, including but not limited to uncertain system conditions (e.g. forced outages and increasing renewable generation levels), abnormal system

conditions (e.g. extreme situation after a natural event causing N-x outages) and full coverage studies required by NERC IRO and FAC standards. Activities in 2017 include the installation of VSAT software in the QA environment and testing and training on the tool. The tool will be implemented into the production environment in 2018. The \$0.2 million favorable variance to budget is primarily the result of lower than expected hardware and software costs.

## Multi-Year Projects Over \$1 Million

Project (\$ thousands)	<u>Capital Spend</u>	<u>Remaining</u>	<u>Remaining</u>	<u>Target at</u>	<u>Total</u>	<u>Date</u>
	<u>to Date</u>	<u>Committed</u>	<u>Uncommitted</u>	<u>Completion</u>	<u>Budget</u>	<u>Range</u>
Enhanced Combined Cycle - Gas Day *	\$5,307	\$0	\$0	\$5,307	\$7,013	2015-17
Settlement Systems Replacement	213	253	4,835	5,301	5,131	2017-19
TTSE Dispatcher Training Simulator	228	0	3,426	3,654	3,636	2016-18
PMU Data Exchange, Phase 1 - 3	889	65	0	954	3,443	2016-19
Online Voltage Stability Analysis Tool (VSAT) *	387	284	629	1,300	1,468	2017-18
Total	\$7,024	\$602	\$8,890	\$16,516	\$20,691	

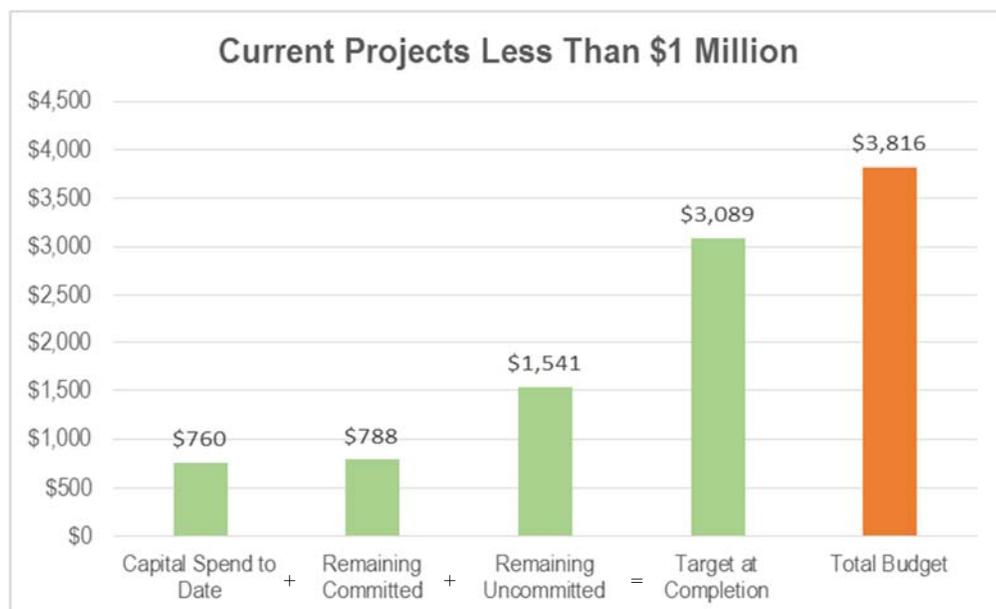
\* Enhanced Combined Cycle-Gas Day, VSAT and Settlements projects include operating expenses not reflected above (\$0.3 million)

## Current Projects Less Than \$1 Million

Projects included are those expected to be completed during 2017 or early 2018 and are less than \$1.0 million in total cost.

With the exception of the Z2 Crediting Priority 2 & 3 project, all of the current projects under \$1 million are underway. The continued need for the Z2 Crediting Priority 2 & 3 project is being reevaluated.

With the exception of the FERC 676-H NITS Oasis Modification project, the forecast to budget variances are due to updates made to the estimated costs of software, hardware, and/or vendor charges based on additional information learned during the planning phases of the various projects.



Regarding the FERC 676-H NITS Oasis Modification project, FERC initially ordered the industry to implement the mandated changes to NITS request entry in OASIS in 2016, and the capital spending for this project was budgeted to occur in 2016. FERC subsequently moved the implementation date to 2017. As a result, the project remains active in 2017. Therefore, the appearance of budget variance is due to FERC's change in the implementation date.

### Current Projects Less Than \$1 Million

Project (\$ thousands)	Capital Spend to Date	Remaining Committed	Remaining Uncommitted	Target at Completion	Total Budget	Date Range
Governance, Risk and Compliance Tool (GRC)**	\$0	\$237	\$228	\$465	\$951	2017
Engineering Hub	255	265	168	688	798	2016-17
Identity and Access Management System (IAMS)*	0	0	479	479	700	2017-18
Z2 Crediting, Priority 2 & 3	0	0	500	500	500	2017
EMS, CMT, and Markets Software & OS Upgrade	136	74	0	210	210	2017
2-Factor Authentication	23	14	0	37	194	2017
Shadow Allocation Calculator	0	0	135	135	120	2017
Circuit Redesign	73	83	0	156	105	2016-18
Marketplace Portal Redesign (formerly "Liferay")	40	0	0	40	100	2016-17
Interface Pricing	0	0	30	30	77	2017
ICCP Software & OS Upgrade	32	32	0	65	62	2017
FERC 676-H NITS Web Oasis Modification *	116	0	0	116	0	2016-17
Market Monitoring Portal *	84	84	0	168	0	2017
<b>Total</b>	<b>\$760</b>	<b>\$788</b>	<b>\$1,541</b>	<b>\$3,089</b>	<b>\$3,816</b>	

\* FERC 676-H was assumed to be complete prior to 2017 and was not included in the 2017 budget. Market Monitoring Portal was approved out-of-budget in early 2017.

\*\* Governance, Risk, and Compliance Tool (GRC) and Identity and Access Management System (IAMS) include operating expenses not reflected above (\$0.2 million and \$0.2 million respectively)

## Future Projects Less Than \$1 Million

The following projects were approved as placeholders during the 2017 - 2019 budget cycle, given they were not expected to begin until after 2017. These projects are being reviewed again during the 2018 – 2020 budget cycle for approval.

Reliability Communications Tool – This project will implement a real-time, web-based, two-way communication tool to relay messages to members and is intended to increase efficiencies in the Operations center while decreasing risk(s) related to manual notifications.

Enhanced Public Data – The scope of this project includes the redesign and implementation of improvements to the current public data web portal. This includes more accessibility and better navigation for market participants by making the public data portal more robust with improved interaction, visualization, filtering, and mobile displays.

Online Transient Security Assessment Tool (TSAT) – The TSAT tool will enable real-time operators and operational planning engineers to prepare for and react to stability concerns in order to maintain reliable operation of the Bulk Electric System. The most significant goal of this project is to identify areas of voltage concerns with real-time and near-term data.

Freeze Date Replacement Allocation Calculator– SPP is currently working with other Congestion Management Process (CMP) members to design and implement a dynamic allocation process that will recognize new Designated Network Resources (DNR) and Transmission Service Reservations (TSRs). The allocations would acknowledge Firm Flow usage in both the TLR and M2M processes.

Coordinated Transaction Scheduling and Day Ahead FFE Data Exchange projects were reevaluated and not submitted for consideration for the 2018 – 2020 budget cycle.

### Future Projects (2018 - 2019 Start Dates)

<u>Project (\$ thousands)</u>	<u>Capital Spend</u> <u>to Date</u>	<u>Remaining</u> <u>Committed</u>	<u>Remaining</u> <u>Uncommitted</u>	<u>Target at</u> <u>Completion</u>	<u>Total</u> <u>Budget</u>	<u>Date</u> <u>Range</u>
Reliability Communications Tool	\$0	\$0	\$250	\$250	\$983	2018-19
Enhanced Public Data	0	0	100	100	100	2019-19
Online Transient Security Assessment Tool (TSA)	0	0	2,233	2,233	559	2018-18
Coordinated Transaction Scheduling	0	0	0	0	354	2018-18
Day Ahead FFE Data Exchange	0	0	0	0	344	2018-18
Freeze Date Replacement Allocation Calculator	0	0	321	321	321	2018-18
Total	\$0	\$0	\$2,904	\$2,904	\$2,661	

# Foundation Expenditures: Information Technology

IT foundation reflects capital spend to refresh, improve and strengthen information technology. Significant investments are made to not only maintain existing capabilities of the technology infrastructure but also for enhancements to address new demands on the system, cybersecurity requirements and incremental additions to SPP's service menu. The budget reflects the approved capital spending for 2017-2019.

2017 - 2019 Information Technology Foundation					
Project (\$ thousands)	<u>2017 Capital</u> <u>Spend to Date</u>	<u>Remaining</u> <u>Committed</u>	<u>Remaining</u> <u>Uncommitted</u>	<u>3-Year</u> <u>Forecast</u>	<u>3-Year</u> <u>Budget</u>
IT Systems Administration	\$1,258	\$662	\$11,029	\$12,949	\$12,688
IT Network/Telecom	40	0	8,849	8,889	8,849
IT Applications	46	50	5,424	5,520	5,520
IT Architecture	0	145	4,255	4,400	4,400
IT Cyber Security	148	187	1,502	1,836	1,840
IT Service Management	82	0	1,418	1,500	1,500
Other Foundation	132	50	3,484	3,666	3,650
Total	<u>\$1,706</u>	<u>\$1,094</u>	<u>\$35,961</u>	<u>\$38,761</u>	<u>\$38,447</u>

The major responsibilities for each IT foundation division are discussed below.

IT Systems Administration – The systems administration department has responsibility for supporting all hardware and software infrastructure, including servers, enterprise storage, storage backup systems, operating systems and systems management tools. The majority of the IT Systems Administration budget is comprised of technology refresh of aged server systems based on the lifecycle policy of five years and additional data storage capabilities due to continuous growth.

IT Network / Telecom – IT Network / Telecom is responsible for managing all data and voice communications for SPP (internally and externally with members), including infrastructures that protect and secure SPP data activity. The budget includes assets such as network switches, routers, firewalls, telephony equipment, monitoring software, cabinet switches and data center cabling infrastructure. As part of a three-year upgrade project beginning in 2015, IT continues to overhaul the core network infrastructure that includes 40GB capacity for core switch modules, firewall modules, cabinet switch technology and data center cabling infrastructure. This encompasses over 350 routers/switches/firewalls which will alleviate existing network performance bottlenecks and position SPP to absorb additional data traffic/processing that is anticipated in upcoming years.

IT Applications – The IT applications department provides 24x7-support for existing systems including transmission, reliability and the Integrated Marketplace. The budget includes incremental software licenses for the Data Services and SQL Virtualization infrastructure and the pursuit of new Oracle database functionality known as “Multi-tenant” which will allow consolidation of databases onto fewer servers, thereby reducing future database server costs. The SQL virtualization infrastructure is intended to offload data from the current Netezza (high speed data storage) environment to lower-tiered storage platforms, thus deferring and/or eliminating the need to upgrade the current Netezza platform due to rampant data growth.

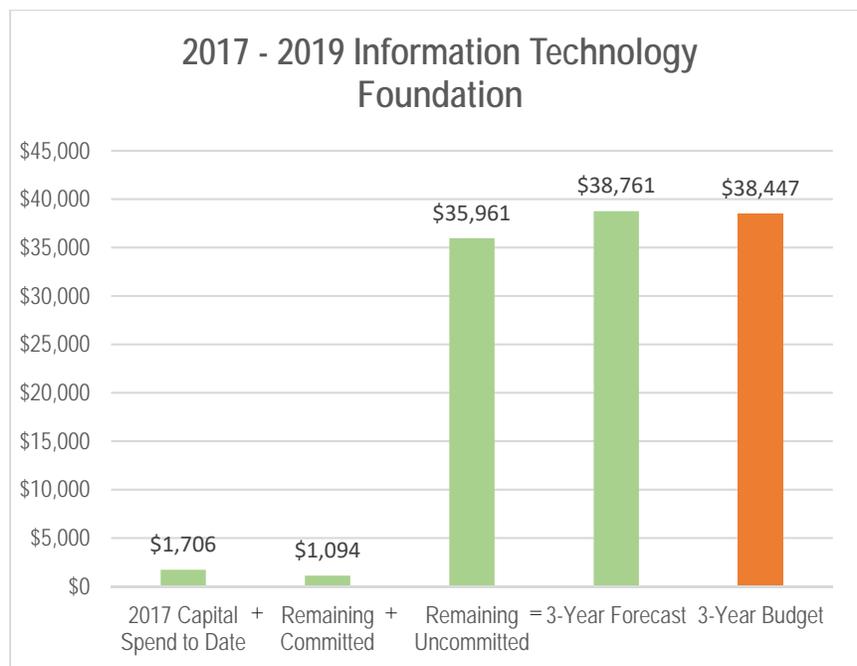
IT Architecture – The focus is on near-term investments which are expected to yield longer-term technical, financial and productivity benefits. The 2017 initiatives align with the architectural roadmap and include data-lake and big data infrastructure foundation, data security and mobile and cloud-based infrastructure.

IT Cyber Security – The cybersecurity department was established to ensure SPP’s compliance with cybersecurity standards, as well as to implement and enforce quality security practices throughout the organization. SPP has identified the risk of a cyber intrusion or hack as the risk of having the highest probability and highest impact when it does occur. Application whitelisting is one of the 2017 projects undertaken to only permit known, secure programs as opposed to attempting to identify and block malicious files and activities.

IT Service Management – The responsibility of the service management division is to manage IT’s process and control systems, including performance/asset monitoring, change management and enterprise support services (i.e., Service Desk). The 2017 budget includes additional software licenses for asset discovery, additional baseline management licenses driven by CIP Version 5 and upgrade/consulting services for SPP’s baseline-management and change-management environments.

Other (Non-IT) Foundation – Items included in this foundation budget encompass all other software and hardware needs for departments outside of IT. A significant amount of the 2017 budget relates to the engineering department’s investments in tools and systems to improve modeling, planning and study activities. This includes additional enhancements to transmission congestion rights and other custom applications, along with additional licensing for Enfuzion (transmission planning studies) and related engineering-support software. Also included are costs for additional licenses, enhancements and consulting services associated with the enterprise records management system.

Based on the current outlook and known requirements, IT expects to manage total capital expenditures of \$8.2 million during 2017.



During the second quarter of 2017, IT incurred approximately \$1.3 million of capital spending, bringing the year to date total to \$1.6 million compared to the annual budget of \$7.9 million. The major expenditures during the second quarter included server upgrades for ICCP, Networker, and Markets-Database servers, along with additional memory and storage for Splunk servers. The remaining second quarter spend consisted of additional Service Management software licenses (BMC BPPM licenses) for monitoring SPP's ESP domain, as well as external vendor consulting for CIP recertification requirements and database development.

2017 - 2019 Information Technology Foundation					
Project (\$ thousands)	<u>2017 Capital</u> <u>Spend to Date</u>	<u>Remaining</u> <u>Committed</u>	<u>Remaining</u> <u>Uncommitted</u>	<u>3-Year</u> <u>Forecast</u>	<u>3-Year</u> <u>Budget</u>
IT Systems Administration	\$1,258	\$662	\$11,029	\$12,949	\$12,688
IT Network/Telecom	40	0	8,849	8,889	8,849
IT Applications	46	50	5,424	5,520	5,520
IT Architecture	0	145	4,255	4,400	4,400
IT Cyber Security	148	187	1,502	1,836	1,840
IT Service Management	82	0	1,418	1,500	1,500
Other Foundation	132	50	3,484	3,666	3,650
Total	\$1,706	\$1,094	\$35,961	\$38,761	\$38,447

IT will continue to implement initiatives identified within the 2017 Operating Plan throughout the rest of the year. Initiatives currently underway include:

- Security vulnerability assessments and CIP certification services
- Splunk enterprise security implementation (allowing for improved event correlation & anomaly detection)
- Aged server replacements - ICCP and markets
- Big data production infrastructure scale-out
- Network firewall replacement/upgrade, and voice-over-IP upgrade
- Data backup infrastructure

# Foundation Expenditures: Operations, Facilities & Settlements

The following foundation budget reflects capital spend for enhancements to marketplace, settlements and operations applications and for various upgrades/improvements to SPP campuses.



Operations Marketplace foundation reflects capital spending to enhance and improve SPP's marketplace and legacy applications. These applications include the market operations system, energy management system, centralized modeling tool, dispatcher training simulator, and various other applications supporting the operations division. Through the second quarter, \$0.9 million in software enhancements were developed by outside vendors as compared to the full year 2017 budget of \$2.0 million. The majority of these enhancements were to the market operations system to address member revision requests.

Operations Legacy foundation cost is down from the original 2017-2019 budget due to various factors: 1) a renegotiation of our Enterprise Agreement on our existing PI system licensing, 2) reduction in anticipated seams data request initiatives from CMPWG members, 3) elimination of vendor imposed minimums on routine enhancements, 4) reduction in enhancements needed after significant upgrade to OASIS, 5) reduction in the number of change requests from stakeholders, and 6) reduction due to vendor program resulting in free programming hours.

Facilities Foundation includes various upgrades/improvements to the SPP corporate campus and to the Chenal and Maumelle operations data centers (CODC and MODC). Some of the larger initiatives for 2017 include the application of exterior window impact film to the CODC and MODC (\$0.2 million) and office space reconfigurations at the corporate campus (\$0.1 million). The 2017 forecast is expected to exceed budget due to air conditioning controls replacement costs which were budgeted and expected to be complete in 2016, enclosure of the MMU area on the 3<sup>rd</sup> floor was unbudgeted and training room upgrades exceeding the 2017 budgeted amount.

Settlements foundation reflects capital spending to enhance and improve the current market and transmission settlements systems. Replacement of these systems is currently underway and is expected to be complete in early 2019. Enhancements to the current systems will be limited to critical and/or mandatory changes, and therefore, total spend is expected to be under budget.

2017 - 2019 Operations, Facilities & Settlements Foundation					
Project (\$ thousands)	<u>2017 Capital</u>	<u>Remaining</u>	<u>Remaining</u>	<u>3-Year</u>	<u>3-Year</u>
	<u>Spend to Date</u>	<u>Committed</u>	<u>Uncommitted</u>	<u>Forecast</u>	<u>Budget</u>
Operations Marketplace Enhancements	\$854	\$2,946	\$2,000	\$5,800	\$5,800
Operations Legacy Enhancements	54	306	680	1,039	1,699
Facilities Foundation	106	258	751	1,114	1,016
Settlements Foundation	1	161	340	502	750
Total	\$1,014	\$3,671	\$3,770	\$8,456	\$9,265

Ops, Facilities & Settlements Foundation Forecast by Year					
Project (\$ thousands)	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>3-Year</u>	<u>3-Year</u>
	<u>Forecast</u>	<u>Forecast</u>	<u>Forecast</u>	<u>Forecast</u>	<u>Budget</u>
Operations Marketplace Enhancements	\$1,800	\$2,000	\$2,000	\$5,800	\$5,800
Operations Legacy Enhancements	281	414	344	1,039	1,699
Facilities Foundation	584	250	280	1,114	1,016
Settlements Foundation	152	250	100	502	750
Total	\$2,818	\$2,914	\$2,724	\$8,456	\$9,265

**PMO Project Information**

<b>Project Name: PR20160003</b> Two-Factor Authentication	<b>Owning Department</b> IT	<b>Member-Facing/Impacting?</b> Yes - Impacting
<b>Status</b> <span style="background-color: green; color: white;">Green</span> – On Schedule and below budget	<b>Project Phase</b> Executing/Testing in MTE	
<b>Project Description:</b> Security related incidents are becoming more frequent and challenging. Companies are actively enhancing the authentication mechanisms to filter out the right end user from the wrong end user. Multi-factor authentication mechanisms are now an industry standard and becoming mandatory where critical business data is exposed to the end users through Internet. This project effort is to implement a process for Two-Factor authentication that will impact IT Marketplace Application environments including internal and external (Vendor and Member) user communities.	<b>Total Budget*</b> \$51,000	<b>Budget Spent to Date</b> \$24,480.00*
<b>Remaining Milestones</b> PROD Code to Enabled 10/10/2017 PROD Code to Required 10/24/2017 Stage Gate 4: Project Close out 11/09/2017	<b>Scope Changes</b> None	

\* - Original Estimate of project was \$197,000.

### PMO Project Information

<b>Project Name</b> The Circuit Redesign	<b>Owning Department</b> Communications	<b>Member-Facing/Impacting?</b> No
<b>Status</b> <span style="background-color: red; color: black;">Red</span> – end date passed+	<b>Project Phase</b> Execution & Construction	
<b>Project Description:</b> SPP’s current version of its employee intranet, <u>The Circuit</u> is outdated, runs on various pieces of software no longer supported, and has many broken functions. This project is to create a user-friendly and up-to-date intranet without any broken modules or functions. The goals for the new intranet include improved functionality, enhanced ability to find information and an improved design that drives more employee collaboration.	<b>Total Budget</b> \$80,245	<b>Budget Spent to Date</b> \$82,113*
<b>Remaining Milestones</b> <i>Pending finalization and PRPC schedule approval:</i> Completion of Development - 11/7/17 Technology/Data Migration and Testing - 12/31/17 Launch of New Intranet – TBD Project Closure – TBD	<b>Scope Changes</b> None	

+ Original End Date – 11/30/16

The web development vendor contracted to complete The Circuit Redesign project missed numerous deliverables and promised deadlines. After being acquired by a company in a different industry and with about 25% of the development remaining, the vendor notified SPP that they would not complete the project. A new vendor is engaged to complete the site. Previously provided milestone dates were early estimates. The team is working with the vendor to re-baseline the schedule by 9/22/17.

\* The contract with the first vendor provided payments by milestones, with emphasis on the front-end deliverables. The first vendor was paid accordingly. Additional out of budget dollars will be needed to complete the project. Reasons for the project overage include:

- Due to staff changes, the original budget was not adjusted to match the selected proposal
- The first vendor underbid the project in order to begin work with SPP
- The first vendor quit before completing the project, breaching the contract
- Progress was lost in having a new vendor review and restart the work

The team is currently working with the new vendor to finalize the new budget amount by 9/22/17.



**PMO Project Information**

<b>Project Name</b> PR20170002 EMS, CMT, MDB, MKTNET Upgrade	<b>Owning Department</b> Reliability and Markets Operations	<b>Member-Facing/Impacting?</b> No
<b>Status</b> <span style="background-color: red; color: black;">Red</span>	<b>Project Phase</b> Executing	
<b>Project Description:</b> Upgrade to supported versions of EMS/CMT/Markets GE/Alstom e-terra* products running on compatible and supported operating systems in accordance with industry and SPP standards (e-terraplatform 2.5, e-terrahabitat 5.10 to have an end of life of January 2020. Complete server hardware refresh and required operating system upgrades for the all environments for EMS, CMT and Markets (MKTNET, AIE, AIMMS, RRC) with an end of life of January 2018. Perform EMS RHEL7 and Habitat 5.10 upgrade & CMT Oracle 11g to 12c database software upgrade in parallel to these efforts with an end of life of December 2020. This project is to be delivered in 3 phases. The first phase includes upgrades to EMS and CMT hardware and software. This is scheduled for delivery in February 2017. The second phase upgrades the Markets database (MDB) hardware and software from Oracle 11G to Oracle 12C. Phase three upgrades MKTNET and ancillary applications.	<b>Total Budget</b> \$210,000	<b>Budget Spent to Date</b> \$451,107.75*
<b>Remaining Milestones</b> MDB PROD Cutover – 9/26/17 - Updated PROD cutover for CMT – 11/1/17 Complete Parallel Ops – 11/28/17 Cutover PROD for EMS and MKTNET – 11/28/17	<b>Scope Changes</b> None	

\* A top-up PO has been submitted and is in review by the vendor that will cover costs beyond the budgeted amount.

**PMO Project Information**

<b>Project Name</b> Engineering Hub	<b>Owning Department</b> Engineering	<b>Member-Facing/Impacting?</b> Yes
<b>Status</b> <span style="background-color: red; color: white;">Red</span> – End Date in jeopardy	<b>Project Phase</b> Testing	
<b>Project Description:</b> This project proposes implementation of an automated Engineering Hub capable of interfacing with other applications within SPP through standard database protocols. It will allow export functionality of model data through a web-based graphical user Interface (GUI). The web-based front end will provide review and editing capability to authorized users. The users will be able to edit data through the GUI as well as cross-reference data. The database will also store the base committed model for review and reporting. Each change or submission will be stored in the database as a changed project with a unique project identifier, created date, effective date, and submitter details. The system will also generate and send applicable email notifications and/or reminders to SPP, Members, and/or applicable non-Members for each submission. Email notifications will help both SPP and Stakeholders better meet NERC Standard (MOD-32-01, etc.) compliance requirements. This system reduces SPP staff time performing manual tasks, which will increase efficiency and productivity while helping to reduce data errors.	<b>Total Budget</b> 647,880	<b>Budget Spent to Date</b> 357,600
<b>Remaining Milestones*</b> <ul style="list-style-type: none"> <li>• RA/MDWG Member Training Complete – 11/17</li> <li>• RA/MDWG Member Testing Complete – 12/8</li> <li>• Implementation – 12/11</li> <li>• Project Closure – 12/22</li> </ul>	<b>Scope Changes</b> None	*Project team has identified new milestone dates; will request approval from PRPC to move ahead with updated schedule; no increase in scope or budget

**PMO Project Information**

<b>Project Name</b> GRC Tool Project	<b>Owning Department</b> Compliance	<b>Member-Facing/Impacting?</b> No
<b>Status</b> <span style="background-color: purple; color: white; padding: 2px;">Purple</span> – No end date determined  Analysis and Design (A&D) is about 75% complete and meetings will continue through the end of September. The vendor design has an anticipated approval date of Friday, October 6 <sup>th</sup> . Once A&D is complete, SPP and the vendor will have an implementation date set and agreed upon.	<b>Project Phase</b> Planning (A&D Vendor)	
<b>Project Description:</b> A governance, risk, and compliance (GRC) tool will: 1) assist in the identification of job tasks that have compliance or risk management obligations, 2) provide mapping and workflows to support performance of those obligations, and 3) assist staff in managing their responsibilities in a timely, effective, efficient manner	<b>Total Budget</b> \$466,000	<b>Budget Spent to Date</b> \$129,545.32
<b>Remaining Milestones</b> Vendor A&D Completion: 10/06/17	<b>Scope Changes</b> None as of 09/19/17	

**PMO Project Information**

<b>Project Name</b> PR20170001 ICCP SW and OS Upgrade	<b>Owning Department</b> Reliability Operations	<b>Member-Facing/Impacting?</b> No
<b>Status</b> <span style="background-color: green; color: black;">Green</span>	<b>Project Phase</b> Executing	
<b>Project Description:</b> Upgrade to a supported version of ICCP (Alstom e-terracom) software running on a compatible and supported operating system in accordance with industry and SPP standards. The 32 bit to 64-bit software upgrade will also allow more permission to be granted to data items without reaching memory limitations. This upgrade will update the existing architecture of six production servers and four ITE servers to six production servers and two ITE servers.	<b>Total Budget</b> \$64,993	<b>Budget Spent to Date</b> \$32,496  We've met the budgetary requirement that obligates us to this amount.
<b>Remaining Milestones</b> Complete Testing of PROD/DR – 10/23/17 Cutover new DR – 10/26/17 Cutover to new PROD – TBD	<b>Scope Changes</b> None	

**PMO Project Information**

<b>Project Name</b> Identity and Access Management Phase I	<b>Owning Department</b> IT Cyber Security	<b>Member-Facing/Impacting?</b> No
<b>Status</b> <b>Green</b> – On Schedule PRPC approved re-baselining the project plan in August.	<b>Project Phase</b> Testing	
<b>Project Description:</b> This a phased project to identify, purchase and deploy an Identity and Access Management System and implement any supporting processes. Phase 1 includes Requirements Gathering, Conceptual Design, Gap Analysis, Proofs of Concept, and selection of an IAM solution	<b>Total Budget</b> 600,000	<b>Budget Spent to Date</b> \$119,729*
<b>Remaining Milestones</b> <ul style="list-style-type: none"> <li>• IBM Proof of Concept Complete - 9/29/17</li> <li>• SailPoint Proof of Concept Complete - 10/31/17</li> <li>• Software Solution Chosen - 11/15/17</li> <li>• Project Closure – 11/30/17</li> </ul>	<b>Scope Changes</b> None	

\* - The consulting activities in Phase 1 were deemed to be Operating Expenses; treated as an IT-Outside Expense. Last month's report had a typo. Confirmed this number to be correct.

**PMO Project Information**

<b>Project Name</b> Marketplace Portal Redesign	<b>Owning Department</b> IT Applications	<b>Member-Facing/Impacting?</b> Yes
<b>Status</b> COMPLETED	<b>Project Phase</b> Production	
<b>Project Description:</b> Eliminate the use of Liferay as the Marketplace Portal. Develop an in-house alternative solution, eliminating maintenance and support costs associated with Liferay.	<b>Total Budget</b> \$100,000	<b>Budget Spent to Date</b> \$40,300
<b>Remaining Milestones</b> Decommission old portal – 08/22/17 Project Closure – 09/17	<b>Scope Changes</b> None	

**PMO Project Information**

<b>Project Name</b> Online VSAT	<b>Owning Department</b> Operations	<b>Member-Facing/Impacting?</b> No
<b>Status</b> Green – On schedule	<b>Project Phase</b> Executing and Testing	
<b>Project Description:</b> Voltage Stability is the ability of a power system to maintain steady voltages at all buses in the system after a large disturbance. The On-Line Voltage Security Assessment Tool (VSAT) software uses real-time and fixed data sets to provide SPP comprehensive analyses for predicting and preventing voltage insecurity problems. The Online VSAT project will deliver the tool in a production environment by the project end date in 2018.	<b>Total Budget</b> \$1,468,000	<b>Budget Spent to Date</b> \$433,080
<b>Remaining Milestones</b> Software installation in QA environment - 8/31/17 Integration, enhancements and testing - 10/31/17 Internal Training and Education – 02/28/18 Software installation in Production environment - 03/23/18 Data validation complete – 11/30/18 Project Closure – 12/31/18	<b>Scope Changes</b> None	

**PMO Project Information**

<b>Project Name</b> PMU Data Exchange	<b>Owning Department</b> Operations	<b>Member-Facing/Impacting?</b> Yes
<b>Status</b> Green – On schedule	<b>Project Phase</b> Testing	
<b>Project Description:</b> SPP has a need to install the components for Synchrophasor aka Phasor Measurement Unit (PMU) data exchange and analytics. PMU devices can capture voltage, frequency, current, and angle for the 3 phases at a substation as fast as 60 measurements a second. This granularity of data enhances after-the-fact event analysis, model validation efforts, and real-time situational awareness. It can also aid in improving State Estimator accuracy.  The scope of the project includes tasks designed to launch the software, as well as educate, research and obtain member feedback on the usage of PMU data in the SPP footprint.	<b>Total Budget</b> \$1,888,000	<b>Budget Spent to Date</b> \$908,058*
<b>Remaining Milestones</b> Synchrophasor Strike Team Deliverables - 11/30/17 Production Testing Complete - 10/31/17 Internal software training and education - 10/31/17 Data quality and validation – 11/30/17 Project Closure – 12/31/17	<b>Scope Changes</b> None	

\* The project is tracking under budget for the following reasons:

- Contract negotiations yielded a savings of \$354k from the original estimates for software license and support expenses.
- A technology analysis (open-source vs. vendor supplied) for long-term storage of data reduced hardware costs.
- SPP project staff have been able to complete numerous tasks budgeted for the software vendor to complete, for a reduction of about \$150k in estimated professional services.
- SPP project staff determined high-availability hardware and a deployment to the secure CIP environment was not needed at this time, which led to a decrease in hardware expenditures.
- Several budgeted items (virtual servers, SAN storage, SQL License, and Data backups) that were included in original project budget were captured in the IT Foundation budget.

**PMO Project Information**

<b>Project Name</b> Settlements System Replacement Project	<b>Owning Department</b> Settlements	<b>Member-Facing/Impacting?</b> Yes
<b>Status</b> Green (On Schedule and on budget)	<b>Project Phase</b> Executing	
<b>Project Description:</b> The proposed project will replace the current Market and Transmission Settlement Systems with a custom designed single high performance scalable system solution.	<b>Total Budget</b> 5,333,000	<b>Budget Spent to Date</b> \$976,511
<b>Remaining Milestones</b> <b>Milestone 2</b> - Calc Engine, Data Visualization, 20% Calcs – 1/31/18 <b>Milestone 3</b> – Bus Process, UI, 45% Calcs – 6/27/18 <b>Milestone 4</b> – Audit, Workflow, Data Migration, 35% Calcs – 10/31/18 <b>Milestone 5</b> – Rampdown and Transition to SPP – 1/31/18 <b>External Testing</b> – 3/29/19 <b>Go-Live</b> – 5/1/19	<b>Scope Changes</b> None	

**PMO Project Information**

<b>Project Name</b> TTSE DTS Upgrade Project – Phase 2	<b>Owning Department</b> Operation Training	<b>Member-Facing/Impacting? No</b>
<b>Status</b> <span style="background-color: green; color: black;">Green</span>  <b>Phase I (2016)</b> <ul style="list-style-type: none"> <li>Completed in 2016</li> </ul> <b>Phase II (2017-2019)</b> <ul style="list-style-type: none"> <li>Part A:                             <ul style="list-style-type: none"> <li>Storage request filled to complete the database work</li> <li>IT will work on applying Markets to DTS as time permits due to other higher priority obligations</li> </ul> </li> <li>Part B:                             <ul style="list-style-type: none"> <li>An Impact Assessment was requested from GE; however, GE has not had time to work on the request</li> <li>The work is scheduled to be pushed back to 2019</li> </ul> </li> </ul> <b>Phase III (2018)</b> <ul style="list-style-type: none"> <li>Not started; planned to kick-off in 2018</li> </ul>	<b>Project Phase</b> Executing	
<b>Project Description:</b> Phased approach to develop a more realistic simulator environment dedicated to SPP Operations Training  The current Dispatcher Training Simulator (DTS) does not perform as realistically as it could, has limited availability to the Operations Analysis and Performance Support (OAPS) Department and does not meet the current needs of SPP Operators due to the additional role of the BA function.  Creating a second DTS Environment to be used exclusively by OAPS for internal training. Enhancing the current DTS, as well as incorporating market system, to create a TTSE that performs more closely to Real-Time Production Systems.	<b>Total Budget</b> Phase II: \$3,113,250 Phase III: \$187,250	<b>Budget Spent to Date</b> \$159,885
<b>Remaining Milestones</b> Phase IIA – DTS Markets Hardware/Software Build Complete (October 1, 2017)	<b>Scope Changes</b> None as of 08/09/17	



## F.1.1. ADMIN FEE MEASUREMENT

SPP Administrative Fee, Net Revenue Requirement & Load Metric  
 FY Actual vs. Budget Variance  
*(millions)*

	FY Forecast vs. Budget Variance as of:		
	Apr-17	May-17	Jun-17
Gross Revenue Requirement (GRR)	(\$1.7) <span style="color: yellow;">■</span>	(\$2.4) <span style="color: red;">■</span>	(\$1.9) <span style="color: yellow;">■</span>
Net Revenue Requirement (NRR)	(\$2.8) <span style="color: red;">■</span>	(\$3.3) <span style="color: red;">■</span>	(\$2.8) <span style="color: red;">■</span>
Admin Fee Revenue Collected	\$1.2 <span style="color: green;">■</span>	\$1.2 <span style="color: green;">■</span>	\$1.4 <span style="color: green;">■</span>
Over/(Under) Recovery	(\$1.6) <span style="color: yellow;">■</span>	(\$2.0) <span style="color: yellow;">■</span>	(\$1.4) <span style="color: yellow;">■</span>
MWh Load	2.9 <span style="color: green;">■</span>	2.9 <span style="color: green;">■</span>	3.4 <span style="color: green;">■</span>

## F.1.2. ADMIN FEE MEASUREMENT

SPP Administrative Fee, Net Revenue Requirement & Load Metric FY Actual as of June 30, 2017 (millions)			
	2017 Forecast	2017 Budget	Fav /(Unfav)
Gross Revenue Requirement (GRR)	\$163.2	\$161.3	(\$1.9) <span style="color: yellow;">■</span>
Net Revenue Requirement (NRR)	\$163.3	\$160.5	(\$2.8) <span style="color: red;">■</span>
Admin Fee Revenue Collected	\$161.9	\$160.5	\$1.4 <span style="color: green;">■</span>
Over/(Under) Recovery	(\$1.4)	(\$0.0)	(\$1.4) <span style="color: yellow;">■</span>
MWh Load	386.4	383.0	3.4 <span style="color: green;">■</span>

Legend			
	NRR	MWh	Admin Fee
2017 Budget	\$160.5	383.0	\$0.42
1¢ Unfavorable NRR Threshold	\$162.8	383.0	\$0.43
1¢ Unfavorable Load Threshold	\$160.5	377.5	\$0.43
1¢ Unfavorable Impact Factor	(\$2.3)	(5.5)	(\$0.01)

<u>Revenues</u>	
Red	<span style="color: red;">■</span> > = \$2.3 unfavorable
Yellow	<span style="color: yellow;">■</span> between \$1.1 and \$2.2 unfavorable
Green	<span style="color: green;">■</span> < = \$1.0 unfavorable
<u>MWh Load</u>	
Red	<span style="color: red;">■</span> > = 5.5 unfavorable
Yellow	<span style="color: yellow;">■</span> between 3.1 and 5.4 unfavorable
Green	<span style="color: green;">■</span> < = 3.0 unfavorable

## F.1.3 ADMIN FEE MEASUREMENT

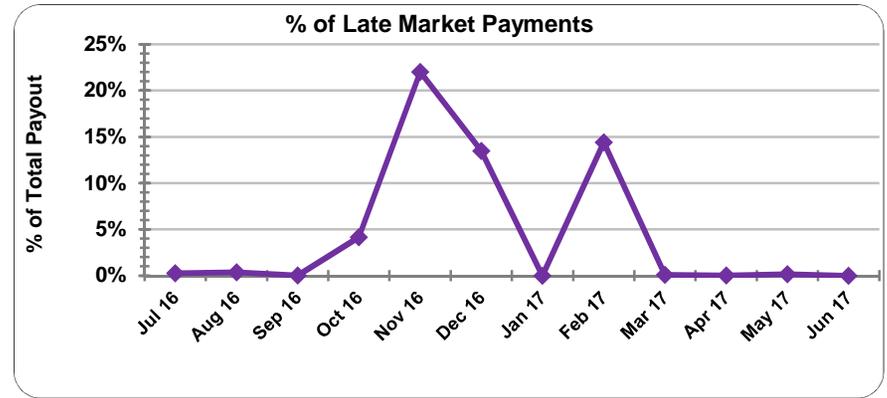
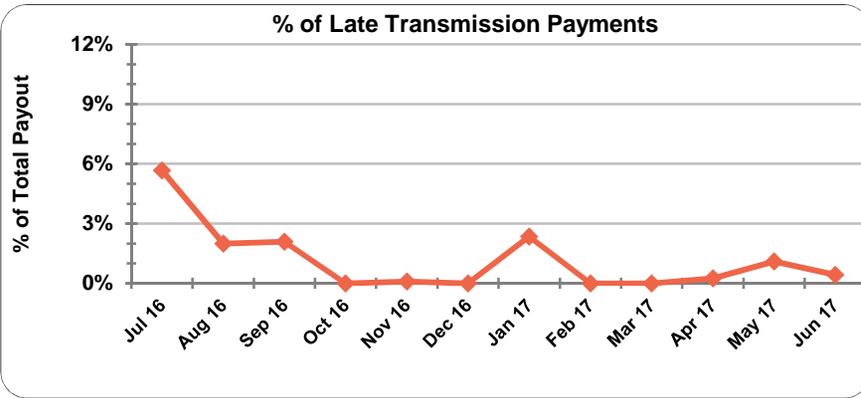
SPP Net Revenue Requirement Components				
FY Actual as of June 30, 2017				
<i>(millions)</i>				
<u>Expenses</u>	<u>2017 Forecast</u>	<u>2017 Budget</u>	<u>Fav /(Unfav)</u>	
Salary & Benefits	\$93.7	\$91.3	(\$2.4)	(2.6%)
Debt Service (Principal & Interest)	33.3	34.0	0.7	2.2%
Communications & Maintenance	21.1	22.2	1.1	5.0%
Outside Services & RSC	15.7	14.5	(1.3)	(8.9%)
Administrative	5.2	5.3	0.1	1.3%
Travel & Meetings	3.1	3.3	0.2	5.6%
Gross Revenue Requirement (GRR)	\$172.1	\$170.5	(\$1.6)	(1.0%)
<u>Revenue &amp; Other Adjustments</u>				
NERC Revenues *	(\$9.9)	(\$10.8)	(\$0.9)	(8.7%)
Other Revenues	(6.6)	(6.1)	0.5	8.4%
NRR Adjustments	7.6	6.9	(0.8)	11.1%
Net Revenue Requirement (NRR)	\$163.3	\$160.5	(\$2.8)	(1.7%)
<i>* Net Impact RE Expense &amp; NERC Funding</i>	\$4.3	\$4.5	(\$0.2)	(3.7%)

## F.1.4. ADMIN FEE MEASUREMENT

SPP Administrative Fee Performance											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<u>Approved Budget</u>											
Net Revenue Required (millions)	\$52.8	\$61.5	\$56.5	\$68.4	\$78.4	\$89.6	\$121.8	\$132.6	\$141.2	\$150.5	\$160.5
MWh Load (millions)	288.6	312.5	331.3	333.5	343.0	353.5	360.9	348.2	363.5	407.2	383.0
NRR / MWh Load	\$0.183	\$0.197	\$0.170	\$0.205	\$0.228	\$0.253	\$0.337	\$0.381	\$0.389	\$0.370	\$0.419
Approved Admin Fee	\$0.190	\$0.190	\$0.170	\$0.195	\$0.210	\$0.255	\$0.315	\$0.381	\$0.390	\$0.370	\$0.419
<u>Actual / Forecast</u>											
Net Revenue Required (millions)	\$48.0	\$58.1	\$59.8	\$63.5	\$80.8	\$84.8	\$123.3	\$137.0	\$142.6	\$144.5	\$163.3
MWh Load (millions)	301.1	296.1	328.2	331.6	341.4	361.7	357.5	351.0	373.6	394.5	386.4
NRR / MWh Load	\$0.159	\$0.196	\$0.182	\$0.191	\$0.237	\$0.234	\$0.345	\$0.390	\$0.382	\$0.366	\$0.423
Calculated Rate Over/(Under) Budget	(\$0.024)	(\$0.001)	\$0.012	(\$0.014)	\$0.008	(\$0.019)	\$0.007	\$0.009	(\$0.008)	(\$0.003)	\$0.003
Load Growth	5.12%	(1.65%)	10.82%	1.05%	2.96%	5.93%	(1.15%)	(1.83%)	6.46%	5.59%	(2.05%)
NRR (calculated rate times load)	\$48.0	\$58.1	\$59.8	\$63.5	\$80.8	\$84.8	\$123.3	\$137.0	\$142.6	\$144.5	\$163.3
Admin fee collected *	\$57.2	\$56.3	\$55.8	\$64.7	\$71.7	\$92.2	\$112.6	\$133.7	\$145.7	\$146.0	\$161.9
Difference Over/(Under)	\$9.2	(\$1.8)	(\$4.0)	\$1.2	(\$9.1)	\$7.5	(\$10.7)	(\$3.2)	\$3.1	\$1.4	(\$1.4)

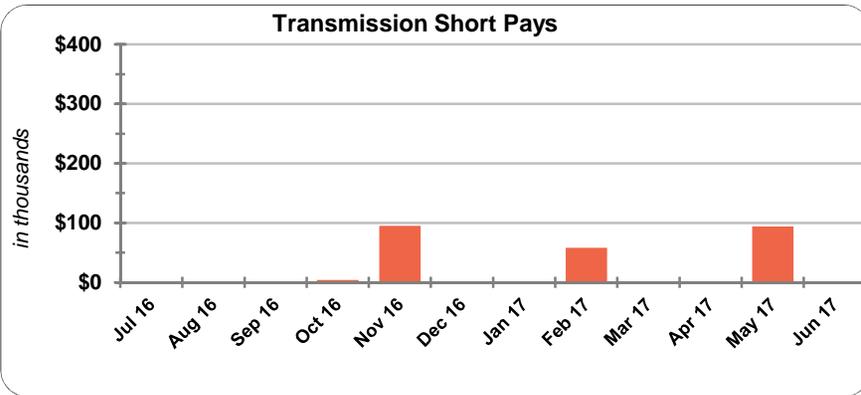
\* Admin fee collected excludes adjustments for monthly assessment refunds to reflect actual load.

## F.2. CREDIT



Transmission (\$000s)	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	12 mo
Late Payments	\$2,537	\$874	\$998	\$0	\$103	\$0	\$933	\$0	\$0	\$112	\$534	\$201	\$6,291
Total Payments	\$44,785	\$43,852	\$47,756	\$48,750	\$112,249	\$42,535	\$39,848	\$40,859	\$48,928	\$45,594	\$48,335	\$46,394	\$609,884
% Late Payments	6%	2%	2%	0%	0%	0%	2%	0%	0%	0%	1%	0%	1%

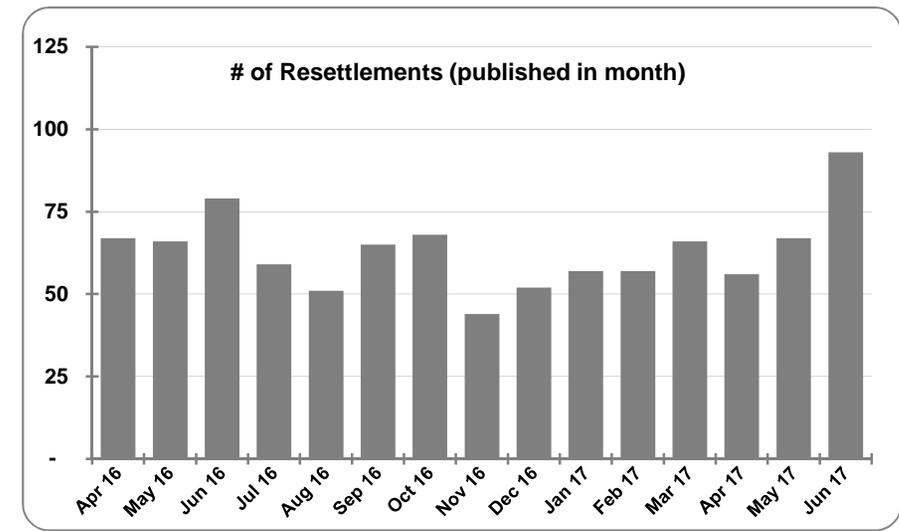
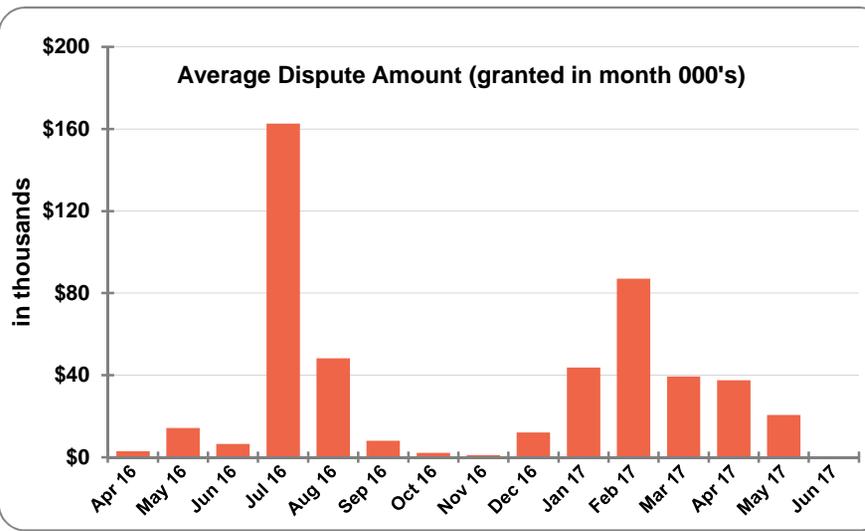
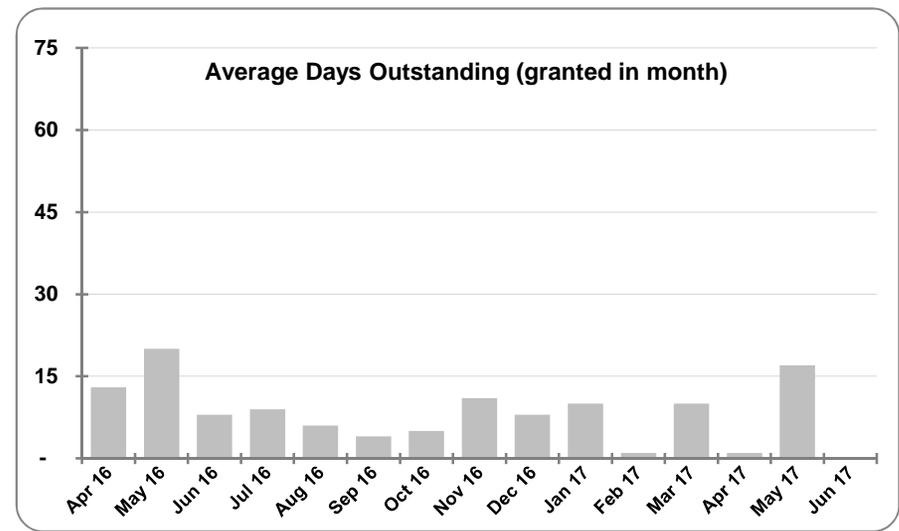
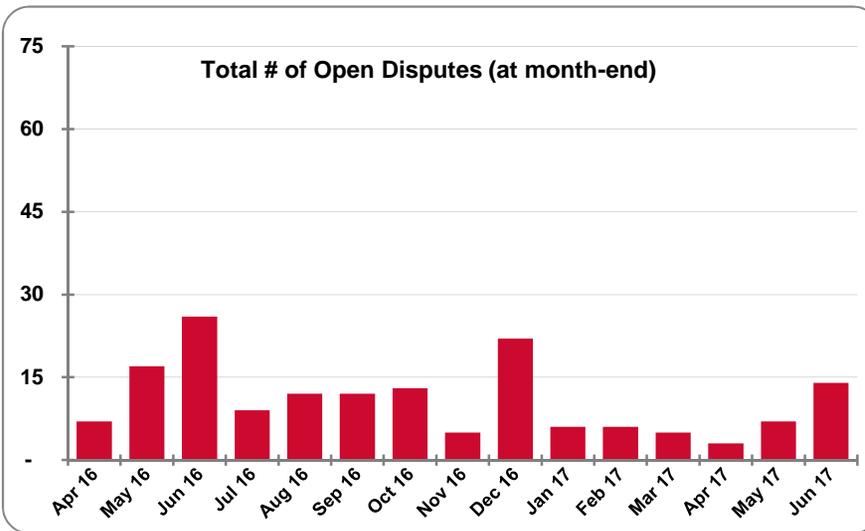
Market (\$000s)	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	12 mo
Late Payments	\$173	\$202	\$4	\$3,634	\$14,704	\$9,514	\$0	\$9,047	\$59	\$3	\$125	\$0	\$37,464
Total Payments	\$71,358	\$54,674	\$64,779	\$87,813	\$66,822	\$70,656	\$89,182	\$62,892	\$66,121	\$103,871	\$80,999	\$60,532	\$879,699
% Late Payments	0%	0%	0%	4%	22%	13%	0%	14%	0%	0%	0%	0%	4%



Short Pays (\$000s)	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	12 mo
Transmission	\$0	\$0	\$0	\$4	\$95	\$0	\$0	\$58	\$0	\$0	\$94	\$0	\$251
Market	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Uncollectible (\$000s)	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	12 mo
Transmission	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3	\$0	\$0	\$0	\$0	\$3
Market	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

### F.3. SETTLEMENT DISPUTES



	Apr 16	May 16	Jun 16	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17
Total # of Open Disputes (at month-end)	7	17	26	9	12	12	13	5	22	6	6	5	3	7	14
Average Days Outstanding (granted in month)	13	20	8	9	6	4	5	11	8	10	1	10	1	17	-
Average Dispute Amount (granted in month 000's)	\$3.0	\$14.2	\$6.5	\$162.6	\$48.3	\$8.0	\$2.2	\$1.0	\$12.0	\$43.8	\$87.0	\$39.4	\$37.5	\$20.6	\$0.0
# of Resettlements (published in month)	67	66	79	59	51	65	68	44	52	57	57	66	56	67	93

# Memorandum

To: **Finance Committee Members**  
From: **Tom Dunn**  
CC: **Shaun Scott**  
Date: **October 3, 2017**  
Re: **2018 Meeting Schedule**

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Detailed below is a schedule for face-to-face meetings of the Finance Committee for 2018 along with suggested agenda items to be covered at the meetings.

<u>Meeting Date</u>	<u>Time</u>	<u>Meeting Location</u>	<u>Major Agenda Item</u>
April 3, 2018	7:30	Dallas, TX	Financial Audit Review (dinner 4/2) Benefit Plan Funding Auditor Engagement
June 12-13, 2018	2:00	Little Rock, AR	FC Training Session
July 30, 2018	7:30	Omaha, NE	FC, SPC, & MOPC Chair meeting
September 25, 2018	8:30	Dallas, TX (AEP Office)	Joint FC/SPC Meeting to review 2019 Operating Plan Mid-year Review
October 30-31, 2018	2:30	Little Rock, AR	2019 Budget Review (dinner 10/30)
November 20, 2018	10:30	Teleconference	2019 Budget (IF NEEDED)
December 3, 2018	2:00	Little Rock, AR	SSAE-16 Audit Report, BPI Review Corporate Insurance Review, Authority Review, Actuary Assumption Review