

Preliminary 2018 Project Budget

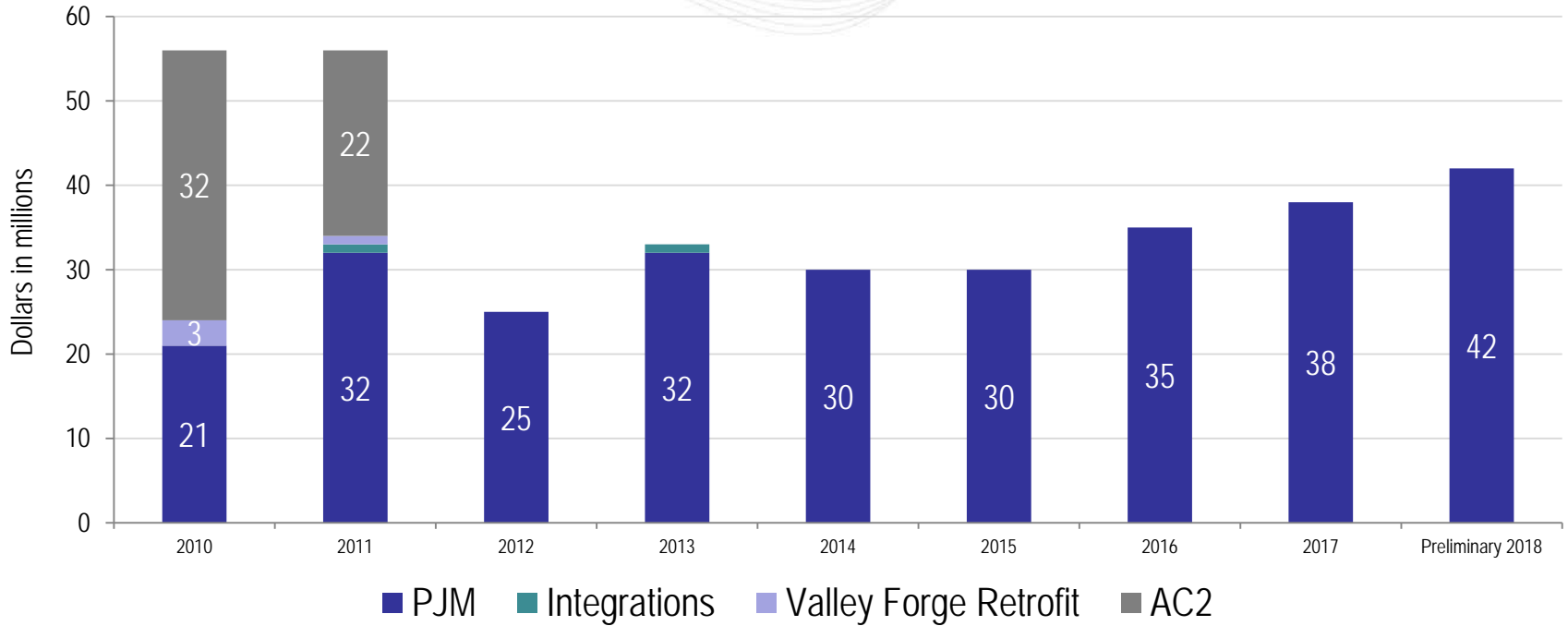


Jim Snow

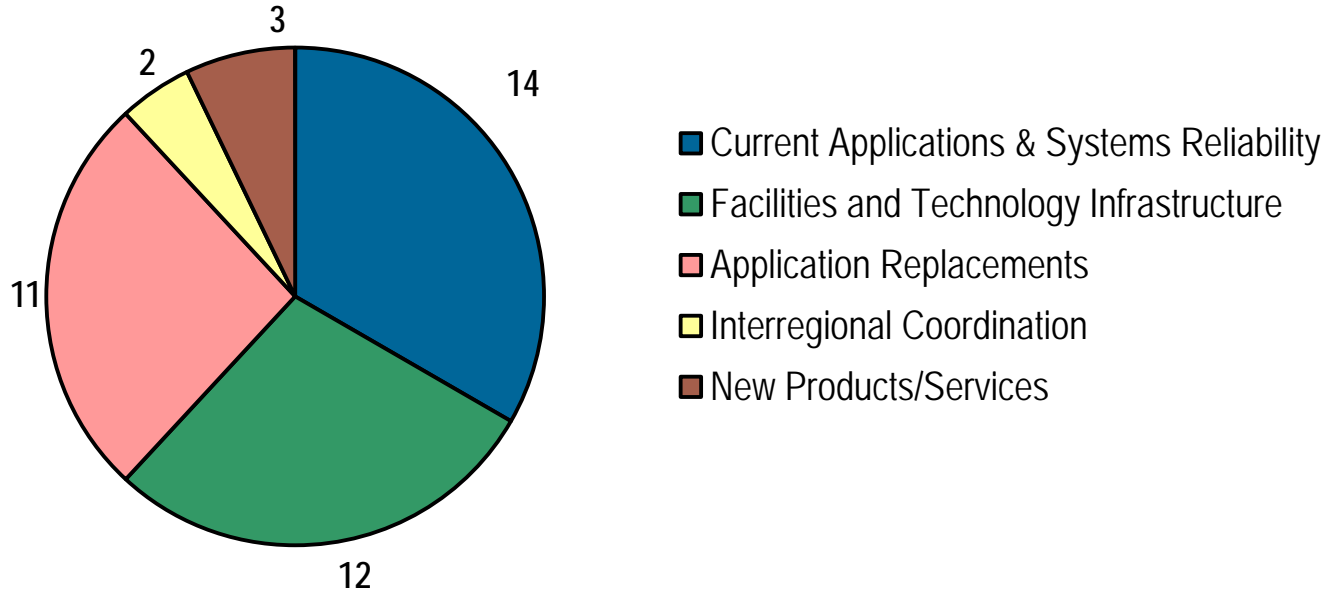
Director, Budgeting & Analysis

Markets & Reliability Committee

September 28, 2017



Total = \$42 million



| <i>(dollars in millions, except rates)</i> | 2017 | 2018 |
|--------------------------------------------|------|------|
| Capital | 14 | 14 |
| Expense | 5 | 5 |

Access Manager – This project will convert to a supported software providing improved access workflows, enhanced user interfaces, enhanced data collection functionality and improved review cycle management.

Identity Management – This project will develop an application to provide management of PJM personnel information and automation of workflows to multiple PJM systems.

Markets Application Improvements – A series of projects to make functionality enhancements to real-time, demand response and other markets-related applications.

eRPM Tools Refresh – This project will update the underlying technology of PJM's online tools framework.

Cyber Security Enhancements – A series of projects to enhance PJM's cyber security posture.

Windows Enterprise Upgrade – This project will upgrade the Windows operating system.

eDART Enhancements – A series of projects to make functionality enhancements to the Dispatcher Application and Reporting Tool.

| <i>(dollars in millions, except rates)</i> | 2017 | 2018 |
|--------------------------------------------|------|------|
| Capital | 8 | 11 |
| Expense | 2 | 3 |

Spectrum Upgrade – This project will implement 64 bit architecture allowing for future expansion of PJM's Supervisory Control and Data Acquisition (SCADA) model.

nGEM – This project is a collaborative project with Market Management System customers and vendor to transform the architecture, technology and products.

Open Access Same-Time Information System (OASIS) Refresh – This project will implement a new framework and new user interface.

Dispatcher Applications and Reporting eTools Refresh – This project will replace current web and power builder user interfaces and framework.

Password Vault – This project will implement an application for managing privileged account passwords providing traceability information and ensuring compliance with NERC CIP standards.

| <i>(dollars in millions, except rates)</i> | 2017 | 2018 |
|--------------------------------------------|------|------|
| Capital | 9 | 12 |
| Expense | 2 | 1 |

Uninterrupted Power Supply (UPS) Replacements – This project will replace the UPS systems for the control centers, which will no longer be supported by the manufacturer and have reached their end of life.

Switch Replacement – A series of projects that will replace the telecommunication network switches and other end of life switch components.

Infrastructure Upgrades – This project will purchase network, servers, and storage, infrastructure that align with PJM's current architecture as older infrastructure becomes obsolete.

Video Wall Upgrade – This project will replace the dispatch wall video cubes in Valley Forge Control Center due to discontinued vendor support.

| <i>(dollars in millions, except rates)</i> | 2017 | 2018 |
|--------------------------------------------|------|------|
| Capital | 2 | 2 |
| Expense | --- | --- |

Market-to-Market Freeze Date and Flowgate Allocation– This project will update the historical transmission entitlements calculations to align with planning, markets and operations processes.

Market-to-Market Double Counting Pseudo Ties – Implementing a solution to address the congestion overlap related to the Pseudo Tie process between MISO and PJM.

Market-to-Market Enhancements – This dispatch management tool will implement transmission upgrade study and interchange distribution calculator (IDC) enhancements.

Joint Common Market – This project will implement several items requested by MISO and PJM stakeholders. The scope includes treatment of pseudo ties and dynamic scheduling as well as increased use of shadow calculations for MISO and NYISO.

| <i>(dollars in millions, except rates)</i> | 2017 | 2018 |
|--------------------------------------------|------|------|
| Capital | 5 | 3 |
| Expense | 1 | 1 |

Public Data Repository – This project will improve PJM's public data presence by implementing a solution that presents information in a unified, consistent, easily accessible manner for both internal and external stakeholders.

Energy Efficiency and Behind the Meter Generation Registration – This project will create a system for PJM members to register and provide the necessary data to support the administration of energy efficiency capacity resources and non-retail behind the meter generation, and increase efficiency to the Reliability Pricing Model process.

Fast Start Combustion Turbine Pricing – This project will implement changes to the Day Ahead and Real Time market clearing engines as a result of expected FERC orders following their Fast Start Pricing notice of proposed rulemaking (NOPR).

Web Based Tariff – This project will improve members abilities to view or research PJM's tariff and manuals on our website.

| Date | Group | Topics |
|--------------|------------------------------------------|------------------------------------------------|
| August 23 | Finance Committee | Preliminary 2018 Budget and Projects |
| September 12 | Operating Committee | Preliminary 2018 Projects |
| September 14 | Planning Committee | Preliminary 2018 Projects |
| September 26 | Finance Committee | Proposed 2018 Budget Recommendations |
| September 28 | Markets and Reliability Committee | Preliminary 2018 Projects |
| October 3 | Finance Committee Member Representatives | Recommendation Letter to PJM Board of Managers |
| October 17 | Board of Managers | Consideration of Proposed 2018 Budget |