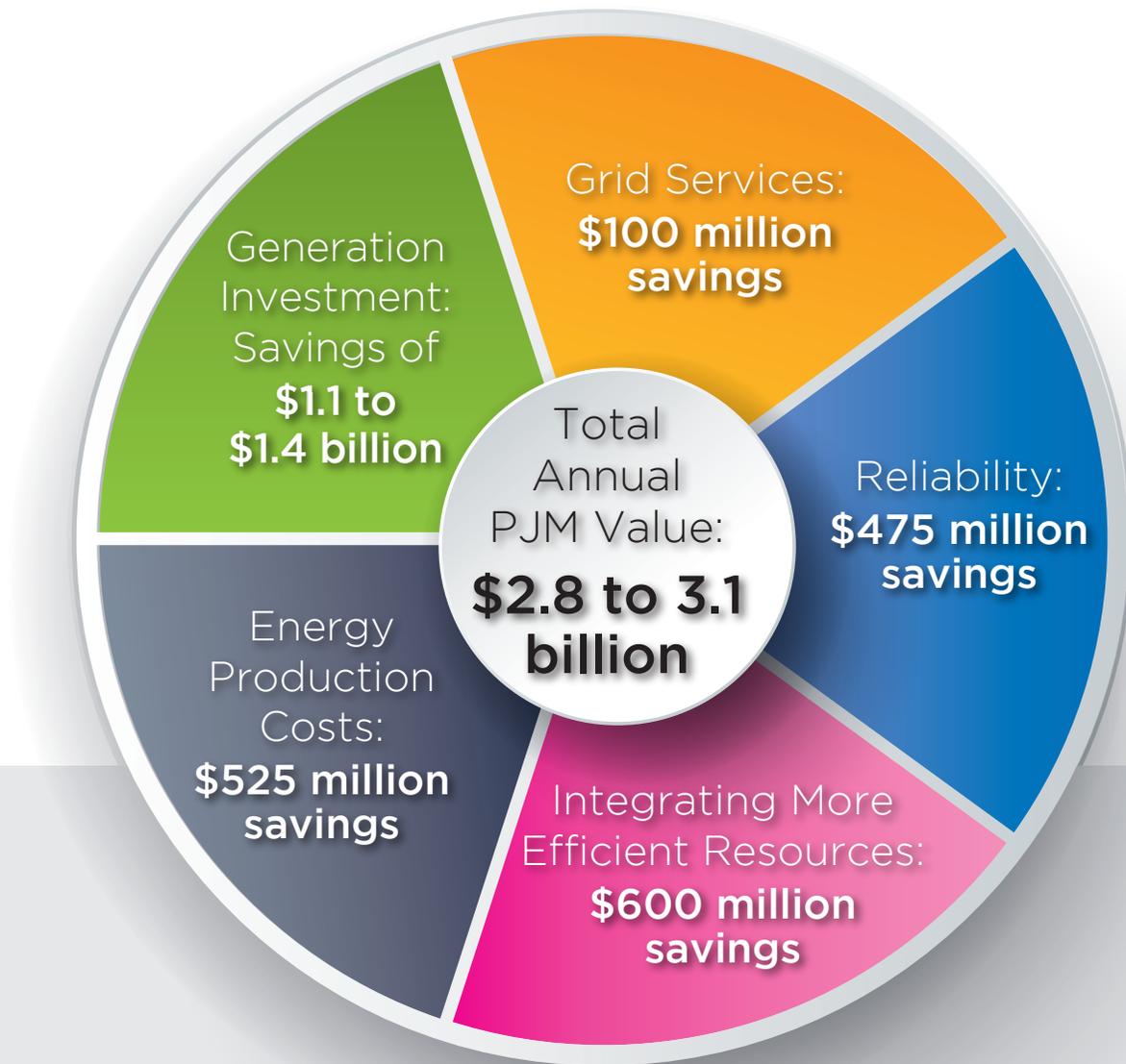




Value Proposition



PJM Interconnection's operation of the high-voltage electric grid and wholesale electricity market provides significant value to the region it serves.

PJM's regional grid and market operations produce annual savings of \$2.8 billion to \$3.1 billion in ensuring reliability, providing the needed generating capacity and reserves, managing the output of generation resources to meet demand and procuring specialized services that protect grid stability.



Reliability:
**\$475 million
savings**

Regional planning efficiencies

PJM's regional planning process assesses the need for transmission upgrades to ensure reliability, increase efficiency and support public-policy goals.

PJM's large footprint makes the transmission planning process more effective by considering the region as a whole, rather than individual states or separate transmission-owner territories, in determining transmission needs.

The transmission upgrades for the 2014, 2015 and 2016 planning years will reduce congestion costs by an average of **\$375 million a year**.

Managing transmission limits

PJM manages the high-voltage electric system over a large geographic area encompassing 13 states and the District of Columbia.

Based on forecasts of how much electricity will be needed each day, PJM accepts offers from electricity producers and determines how to meet the demand in the most cost-effective way. This process takes into account the ability of the transmission system to deliver power. PJM reacts to changes in demand in real time, adjusting generation to be in balance with demand and maintain the transmission system at safe operating levels.

- PJM manages transmission constraints – limitations on the ability of the transmission system to move power – by adjusting the output of generators.
- This is more efficient than the traditional method – transmission loading relief – which curtails power sales between areas or suppliers to manage overloaded lines or other transmission constraints.

Managing the transmission system using fewer transmission loading relief operations saves PJM market participants about **\$100 million a year**.

Lower reserve margin & competition from **alternative resources**

PJM's planning for resource adequacy over a large region results in a lower reserve margin than otherwise would be necessary. Resource adequacy means having enough supply resources available to meet the demand for electricity, plus a reserve to cover emergencies.

In the large PJM footprint, not all areas peak at the same time of the year. As a result, resources in one area of the system are available to help serve other areas at peak times, and a smaller reserve is required.

PJM's Reliability Pricing Model capacity market promotes competition between traditional generation and alternative supply resources such as demand response. With more cost-effective alternatives to maintain adequate power supplies, less investment is needed in new generation.

The reduced reserve margin requirement produces a potential savings in new generation investment of **\$1.1 billion to \$1.4 billion a year.**

Generation Investment:
Savings of \$1.1 to \$1.4 billion

Integrating More Efficient Resources:
\$600 million savings

Replacement of **less efficient resources**

PJM's efficient generation interconnection process combined with the competitive RPM capacity market enables less efficient generation resources to retire and to be replaced with more efficient, less costly plants.

- From the annual RPM auction in 2011 through the 2014 auction, more than 15,000 megawatts of new, natural gas combined-cycle generation either has already commenced operation or has committed to be built through the RPM auctions.
- These resources operate more efficiently, with lower heat rates and in most cases lower fuel costs, than the older, less efficient resources they have replaced through retirement.

Simulations of the increased cost that would be associated with continuing to operate the retired resources instead of the new, more efficient units demonstrate savings of **\$600 million a year.**

Energy
Production
Costs:
**\$525 million
savings**

Expanded dispatch area

PJM's dispatch process enables electric energy to be exchanged economically and automatically when less expensive resources in one area can be used to meet consumer electricity demand in another area.

Prior to the expansion of the PJM footprint a decade ago, energy usually was exchanged between areas only when energy sales transactions were scheduled between two suppliers. Without the operation of the centralized market structure that exists today, economic energy exchanges occurred much less frequently and efficiently.

Simulations of the economic dispatch and energy exchange before and after the PJM market expansion show that operating the larger market creates production cost savings of **\$375 million a year**.

Perfect Dispatch initiative

Perfect Dispatch compares the actual dispatch each day against the hypothetical optimum dispatch that day to spur improvements in performance.

The average savings since Perfect Dispatch implementation in 2008 are **\$150 million a year**.

Ensuring Grid Stability

PJM operates markets for two grid services, regulation and synchronized reserve, which help ensure the stability of the power system.

- Regulation service corrects for short-term changes in electricity use, adjusting generation output to maintain the desired electrical frequency.
- Synchronized reserve service supplies electricity on short notice if the grid has an unexpected need for more power.

As a result of the scope of its market, PJM can carry less of these services than was necessary when individual utilities operated on their own. In addition, market procurement of these services is more efficient.

The total savings stemming from both the reduced quantity of these services required and the reduced cost of their procurement are **\$100 million a year**.

Grid
Services:
**\$100 million
savings**