HOOSIER ENERGY

INTEGRATED RESOURCE PLAN

2016 UPDATE

WHAT IS RESOURCE PLANNING?

Key features

Inputs

- Member input
- Board policies
- Regulatory requirements
- Risk adjusted least cost

Resource mix

Energy need

Costs and rates

Planning Process

Requirements considered + **Timeline established** + **Resources evaluated**

= **Long range resource plan**

The resource planning process projects future consumer needs and comprehensively evaluates options for meeting those needs.

Resource plan inputs include:

- Future consumer needs
- Resource strategies, regulatory policies and member input
- Financial aspects of plan implementation including financing costs and rate structures

Risk analysis

Inputs for the resource planning process are not absolute. Many variables are analyzed to understand the implications and interaction of inputs and impacts on costs and rates.

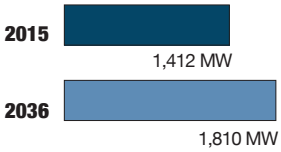
Uncertain future

Resource plans will change over time. Course adjustments will reflect input from members and regulators, changes in growth patterns and financial considerations.

THE HOOSIER ENERGY POWER NETWORK

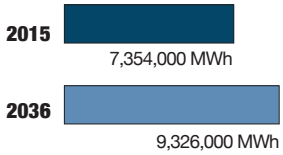
Peak demand

Member peak demand is projected to increase 28 percent by 2036.



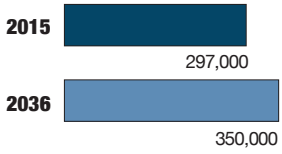
Energy requirements

Member energy needs are projected to increase 27 percent by 2036.



Number of consumers

The number of consumers is expected to increase 18 percent by 2036.

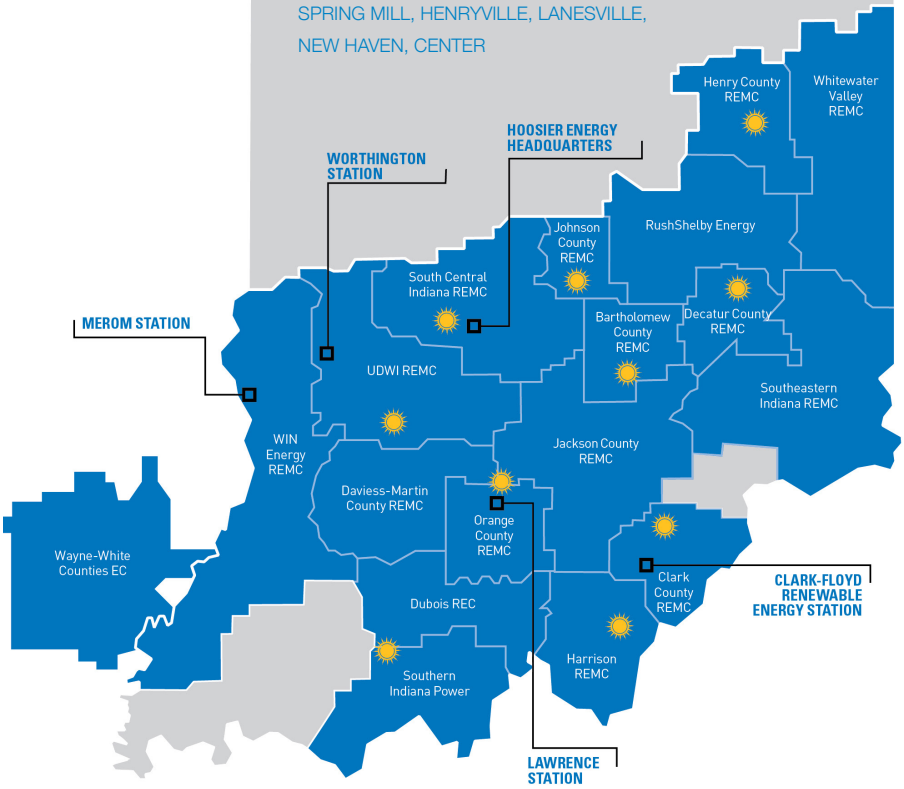


FACILITIES LOCATED IN ILLINOIS:

- DAYTON HYDRO ENERGY PLANT
- LIVINGSTON ENERGY STATION
- RAIL SPLITTER WIND FARM
- HOLLAND ENERGY PLANT
- ORCHARD HILLS

SOLAR FACILITIES:

NEW CASTLE, TRAFALGAR, ELLETTSVILLE, OGIVILLE, SCOTLAND, SPRING MILL, HENRYVILLE, LANESVILLE, NEW HAVEN, CENTER



ELECTRIC CONSUMER FACTS

94%

Consumers who have air conditioning.

46%

Consumers who use programmable thermostats.

33%

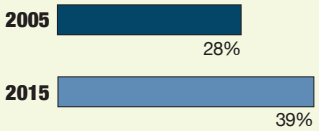
Consumers who use LED lightbulbs.

1,233 kWh

Since 2003, average household monthly electricity use remained relatively constant.

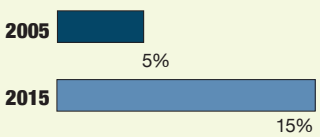
Growing market share for electric heat

The percentage of consumers using electric heat increased by one-third over the past ten years.



Efficient heat pumps drive electric cooling

Heat pump air conditioning has tripled during the past ten years.



MEETING MEMBER NEEDS

Merom Station

Solar

Holland Energy

Lawrence Station

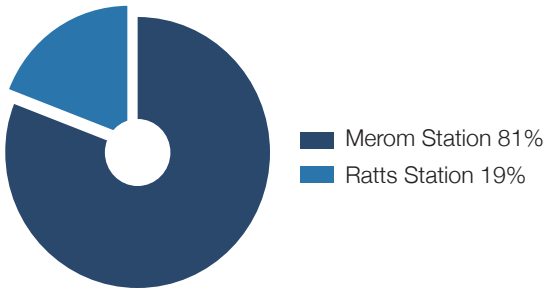
Worthington Station

Renewable facilities

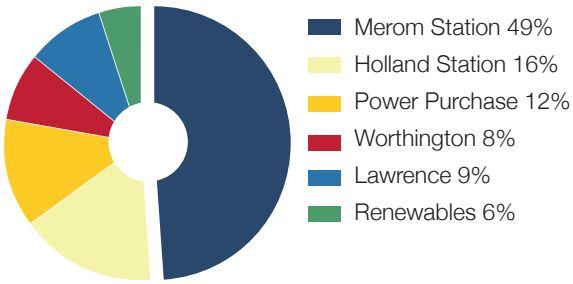
Resource portfolio changes: 2000 to 2016

The Hoosier Energy portfolio has grown and diversified to meet member needs and manage risk.

2000 capacity – 1,250 MW



2016 capacity – 1,996 MW



Hoosier Energy's resource portfolio continues to evolve to meet member needs in a changing market.

Increased capacity

• The portfolio increased approximately 60 percent between 2000 and 2016.

Diversity

• Focus on adding renewable resources

• Purchased power – Duke PPAs are "slice-of-system" agreements served from Duke Indiana's 48 units.

• Fuels – All Hoosier Energy-owned assets added since 2000 use natural gas or renewable resources.

Market changes

• The MISO electricity market, which began functioning in 2005, provides price transparency, reserve sharing, and mitigation of concentration risks.

RESOURCE MIX 2017

Baseload

Baseload resources refer to units with higher capacity factors that are available to operate throughout the year. Other resources could provide baseload energy but far less economically.

The coal-fired Merom Station has a production capacity of nearly 1,000 megawatts and complies with all emission requirements. Other resources include the 250 MW Duke Indiana Purchased Power Agreements.

Intermediate

Intermediate resources provide energy for extended periods of the day. These resources are used to meet increasing demand in weekday hours. A combined cycle natural gas power plant is this type of resource.

Holland Energy, the Hoosier Energy/Wabash Valley 630-megawatt natural gas combined cycle plant, is an important component of the portfolio that typically provides needed energy during peak months.

Peaking

Peaking resources provide energy on very short notice to meet customer energy needs during very few hours of the year. Natural gas combustion turbines are ideal for this application and demand response can help meet this need.

Lawrence and Worthington generating stations efficiently provide electricity from natural gas turbines to meet short term needs. Fast start capability adds power supply flexibility and the units help meet MISO reserve requirements.

Energy Efficiency

Consumers can help manage system demand through energy efficiency. When consumers use new strategies, products and technologies to reduce consumption, the effect is equivalent to adding generation.

For 2015, annual savings from demand-side management programs totaled 48,000 megawatt-hours. Summer demand was reduced by 7 megawatts and winter demand by 11 MW.

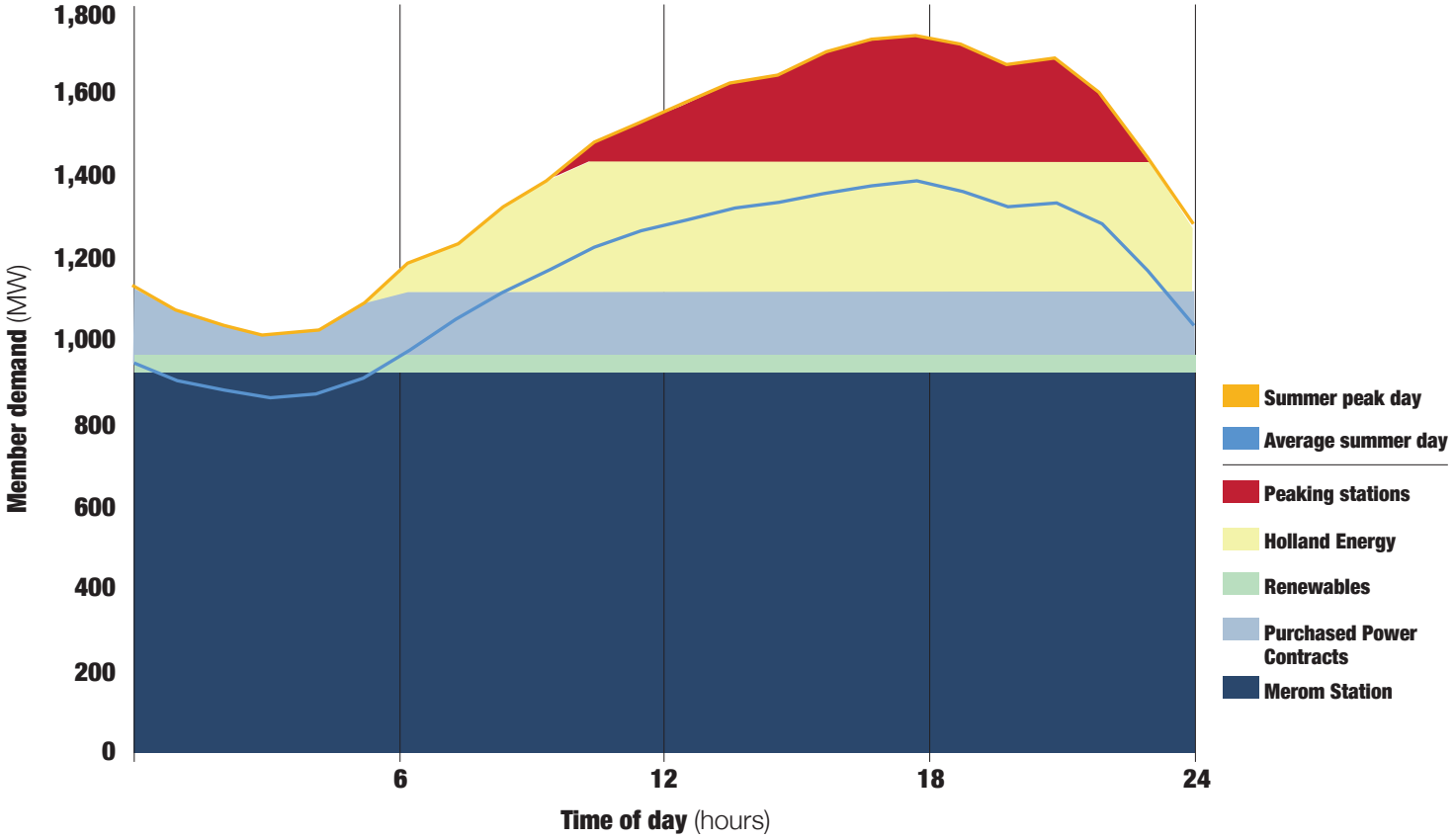
Renewables

Renewable generation includes wind, hydro, solar and biomass facilities that do not rely on traditional fossil fuels. Most renewable facilities operate intermittently and require backup capacity from other generation to meet load and MISO requirements.

Hoosier Energy has developed high-capacity factor landfill gas as well as PPAs that add wind and hydro resources to meet the voluntary Board program of 10 percent of member energy requirements by 2025 from renewables.

RESOURCE CONTRIBUTIONS

How assets will meet member needs in 2018



FUELS

Coal

Although the U.S. Supreme Court issued a stay on the Clean Power Plan, there remains potential for a price on carbon emissions, whether as a result of the CPP, a replacement rule, or new legislation. The carbon price, along with future environmental rules, the resulting potential for significant cost increases, and low natural gas prices make new coal fired generation an uneconomic resource choice.

Natural gas

Natural gas combined cycle plants offer low capital costs and flexible operating characteristics. Low fuel costs and moderate environmental risk make natural gas attractive although price volatility and pipeline capacity remain potential issues.

Energy efficiency

Often called the "fifth fuel"(after coal, natural gas, nuclear, and renewables), energy efficiency offers options to help manage future power requirements. While sometimes cost effective, energy efficiency can be limited and highly dependent upon customer participation.

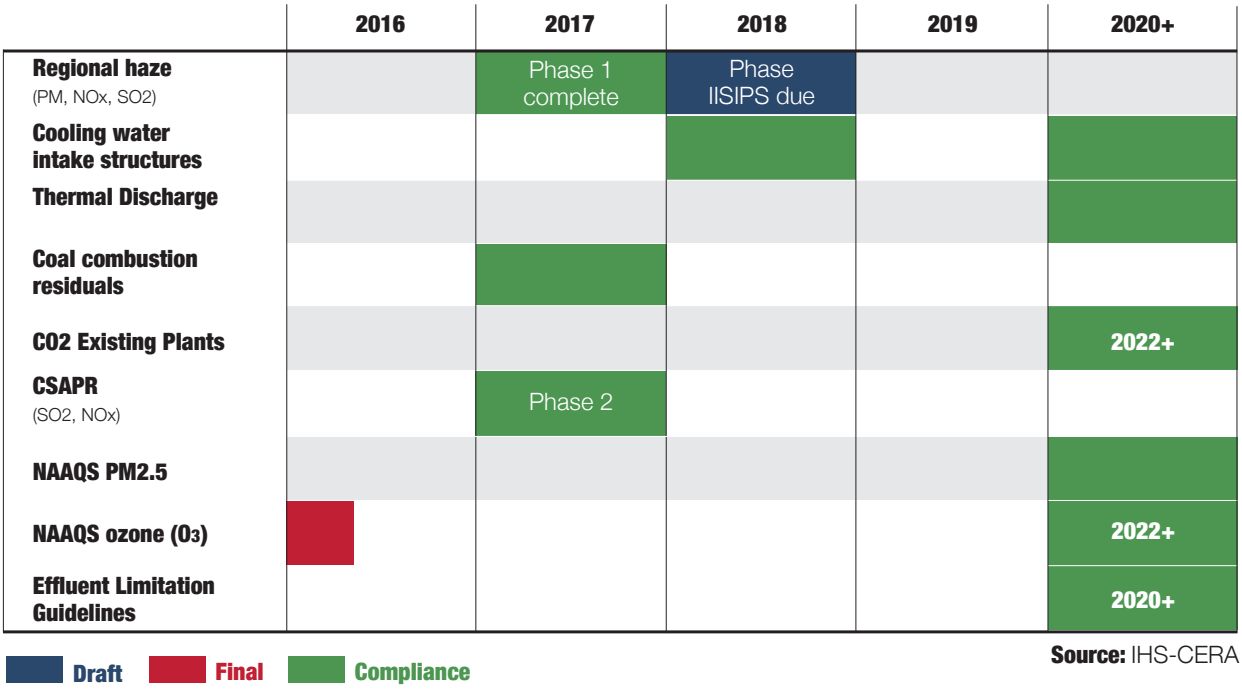
Renewable energy

Renewable energy is the fastest-growing source of new generation. Tax incentives, public policy requirements and consumer support have led to widespread construction of wind and solar projects across the nation. However, these resources remain non-dispatchable and availability during peak periods is less than traditional resources.

KEY RISKS

Environmental rules and regulations

Federal environmental rules



Source: IHS-CERA

Current Status

On August 3, 2015 President Obama announced EPA's issuance of its final rules for reducing carbon emissions from new, modified or reconstructed units (111(b)) and existing units (typically referred to as the Clean Power Plan or 111(d)) along with a proposed Federal Implementation Plan (FIP). Overall the final rule for the Clean Power Plan (CPP) calls for a 32% reduction in power plant CO2 emissions by 2030 from 2005 levels. States more dependent on coal face greater emissions reductions. Indiana is required to reduce CO2 emission by 39% from EPA's 2012 baseline by 2030.

In February 2016 the U.S. Supreme Court issued a stay of the CPP. The stay freezes implementation of the rule until the judicial review process for the rule is complete. Resolution of the current legal process is projected to be mid to late 2018 based on the most recent legal opinions. The stay adds to the legal uncertainty surrounding the rule as well as likely extends the compliance timeline by two to three years if the regulation survives judicial review.

The state of Indiana, already a participant in the legal challenges to the rule, chose to end planning for CPP implementation as a result of the stay. In the absence of state activities, utilities and independent third parties continue to refine analysis and compliance strategies with large variations due to uncertainty discussed above.

Implications for Resource Planning

While the final outcome of the CPP is still uncertain, recent market trends have created a situation that resembles a possible future with the regulation in place. Natural gas fired generation has increased due to low prices spurred by a large supply expansion from unconventional sources. In addition, tax credits, state mandates and declining capital costs have fueled the growth of renewable energy investments. Over this time load growth has slowed due to a combination of energy efficiency gains, economic slowdown and a decline in the en-

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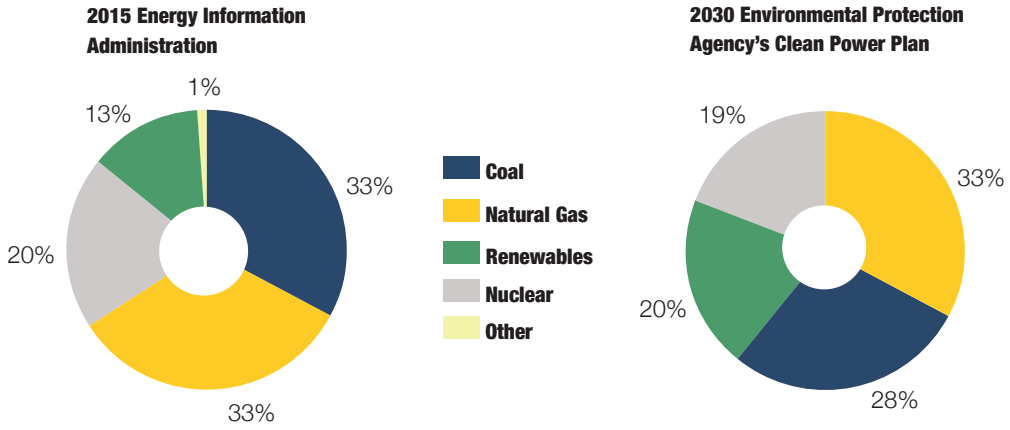
KEY RISKS



Sources: U.S. Energy Information Administration; Environmental Protection Agency.

ergy intensity of gross domestic product. These trends have combined to reduce the amount of coal in the overall generation mix of the U.S. from 45% in 2010 to 33% in 2015.

The EPA's modeling of the CPP did not anticipate the absence of coal from the generation mix. In fact it estimated that coal generation would account for 28% of U.S. electricity supply in 2030 not far from 2015 levels. The market trends are potentially creating new expectations for baseload coal resources. In particular, baseload coal resources may start to be viewed as intermediate resources with strong seasonal run times in the summer and winter. The Merom station experienced a reduction in capacity factor in 2015 related to these trends and similar capacity factors are forecast for the mid-term.

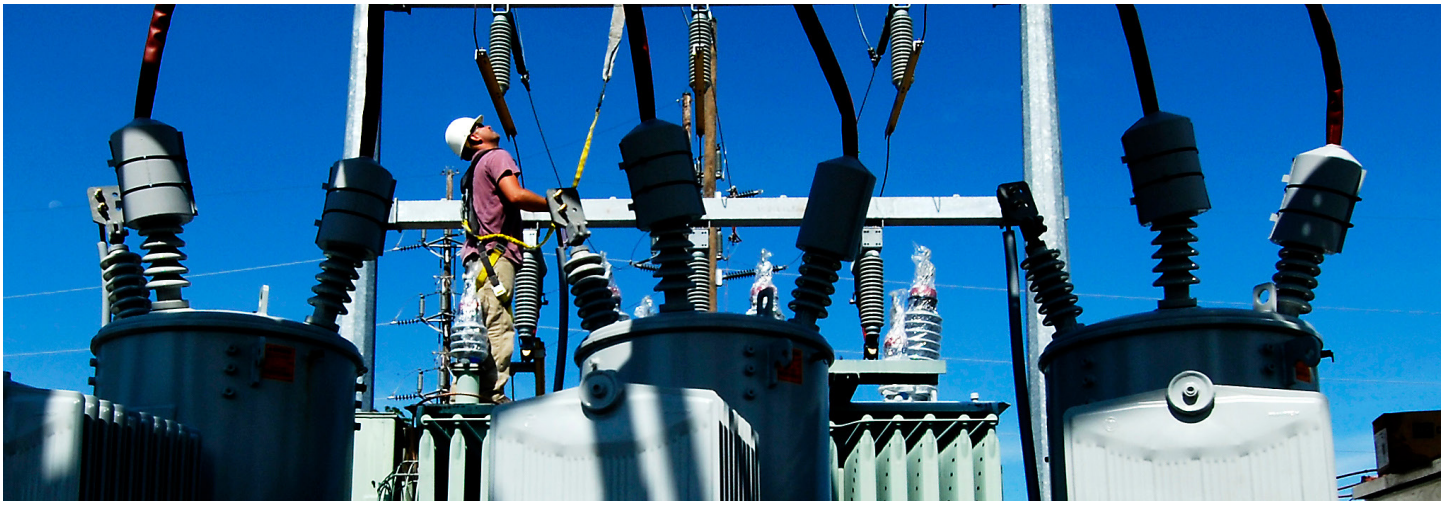
The shift away from baseload coal to re¬newables and natural gas could increase several sources of volatility. Reliance on natural gas generation, both from increasing capacity factors at existing natural gas plants and new builds to replace retiring coal capacity, would raise power market sensitivity to swings in natural gas fuel prices. Moreover, increases in renewable energy generation drive down marginal energy prices in times of high resource output creating a low price situation due to zero fuel costs. When wind and solar resources are not available more and much higher priced generation has to dispatch to cover the gap. The result will be a wider spread between high and low prices (volatility) occurring more frequently than in the past.

Another potential impact of increasing coal retirements and replacing the energy production with renewables will be an increase in capacity price. In a situation similar to being exposed to a volatile energy market, Hoosier Energy may face increased risk surrounding capacity prices if his¬torical capacity resources are reduced and create a short capacity position.

Renewables

The G&T is progressing towards achieving the Board-approved target of supplying 10 percent of member energy needs through renewable resources by 2025. We completed a new power purchase from EDP Renewables of 75MW for the expansion of the Meadow Lake Wind Farm . The Meadow Lake development, which is a 100 MW project in Northern White County Indiana and will come online in 2018. The project will consist of 50 two megawatt turbines. EDP Renewables is the owner of Meadow Lake and also the owner of the Rail Splitter project in Central Illinois with which Hoosier has a 25 MW PPA. A 10MW solar program is well underway with seven 1MW sites completed in 2015 and 2016 and three additional sites to be completed in early 2017 and will continue to diversify our commitment to diversity in size, location, and technology.

KEY RISKS



Transmission price constraints

Congestion is a significant cost risk. Congestion is a result of the locational marginal pricing (LMP) methodology, which reflects the value of energy at specified locations throughout the MISO footprint. If the same priced electricity can reach all locations throughout the grid, then LMPs are the same. When there is transmission congestion generally caused by heavy use of the transmission system, energy cannot flow either from or to other locations. This forces more expensive and/or more advantageously located electricity to flow in order to meet the demand. As a result, the LMP is higher in the constrained locations.

Hoosier Energy has worked with both Aces and outside consultants to analyze congestion between the generation stations and the Hoosier load zones. The analysis, which includes the MISO-approved transmission expansion plans, generally shows some improvement to congestion impacts even though construction of those lines is currently impacting dispatch of generating units. Therefore, long-term congestion impacts appears to be a low risk at this time.

Hoosier Energy also faces risks associated with the development of independent transmission companies and new transmission projects authorized by MISO. The independent transmission companies (or transcos) have several advantages over vertically integrated utilities including more autonomy through formula rates and the potential for higher returns.

Hoosier Energy's success in preserving grand-fathered agreements (GFAs) provides benefits to members as GFAs are exempt from charges for the largest and most expensive transmission projects including both Market Efficiency Projects (MEPs) and Multi-Value Projects (MVPs). MISO now estimates that the 17 MVPs will cost $6.6 billion and will be completed by 2020. Hoosier Energy has successfully fought prior attempts to eliminate GFAs but the potential for future threats remain.

KEY RISKS

Markets

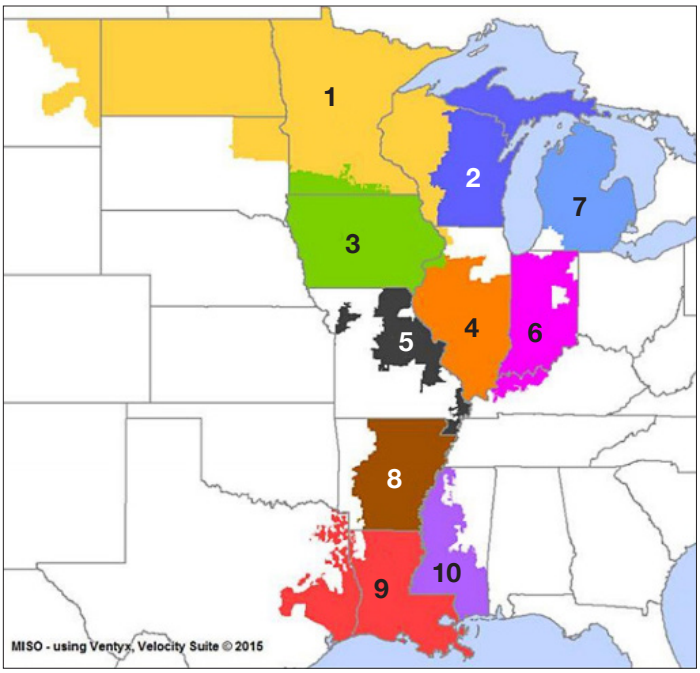
The forward power market remains a viable alternative to satisfy a portion of member needs but the lead time and difficulty to add new resources creates exposure and risk to market price swings. Long-term market exposure can be hedged through assets or purchased power agreements.

Midcontinent Independent System Operator

The MISO footprint is divided into 10 zones for resource adequacy purposes. The purpose of the zones is to reflect transmission capability between the zones and ensure reliability during peak conditions. Hoosier Energy has load and resources in MISO zones 6 (Indiana) and 4 (Illinois).

Independent power producers (IPPs) are pushing for changes in MISO's capacity structure for the competitive retail areas, which includes zone 4 (Illinois) and a portion of zone 7 (Michigan). These IPPs claim insufficient compensation for current resources and also inadequate price signals to incent building new capacity. In response, MISO has proposed a three-year forward market structure for those competitive retails areas. The new structure would be in addition to MISO's current structure for the remaining zones. At this time, it appears that Hoosier Energy's load will be excluded from this structure and that Hoosier's Energy's zone 4 resource (Holland) may participate, if certain conditions are met.

The results of a recent MISO Survey indicate that planning reserve margins are sufficient in the near term but are projected to decline in the future. This has increased the focus on resource adequacy. MISO has proposed several changes, including the use of two different seasons (Summer and Winter) and specific resource accreditation requirements. In addition, MISO is analyzing the need for additional

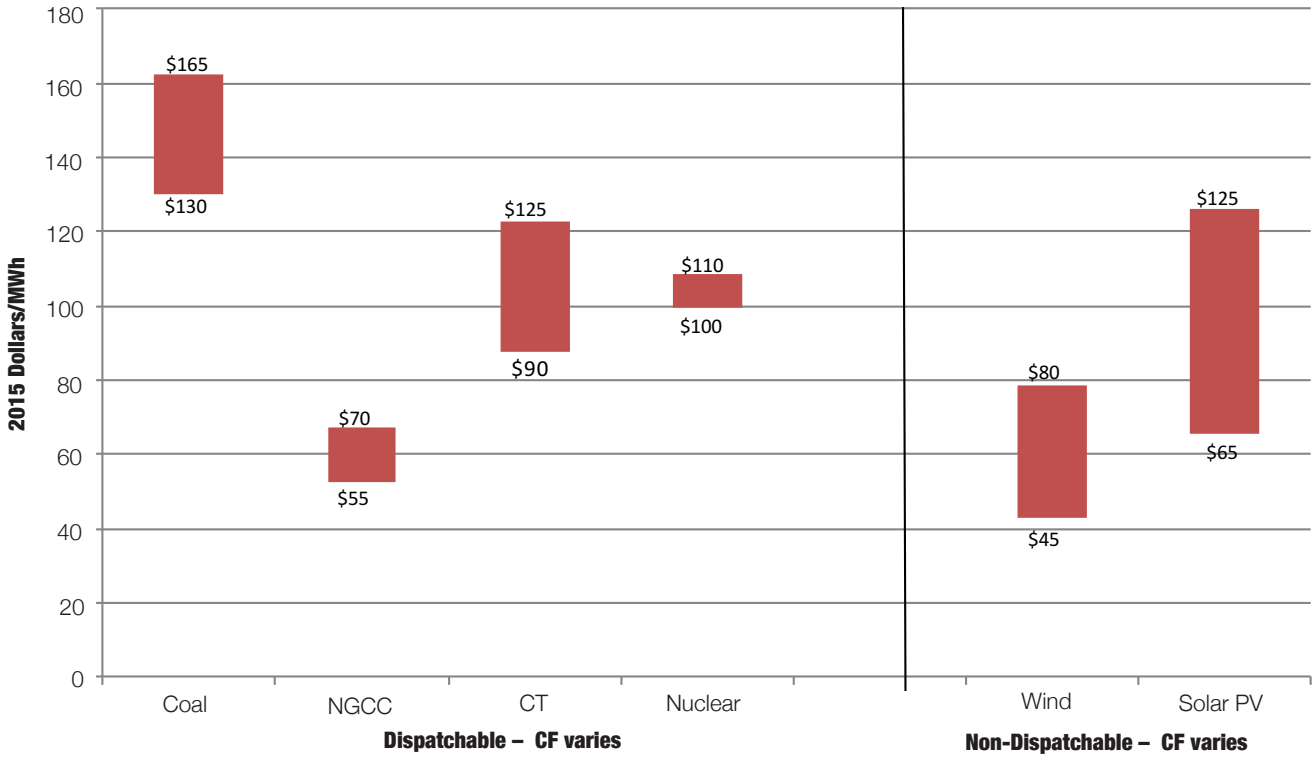


zones and/or the establishment of sub-zones to ensure reliability. Any changes will not be implemented prior to the 2018 -19 Planning Year.

Overall, Hoosier Energy's capacity resource portfolio is balanced and the differential between zones should remain manageable. Hoosier Energy will continue to monitor and participate in the MISO resource adequacy discussions to mitigate this risk.

ENERGY COST OF NEW GENERATION

The chart below reflects the U.S. Energy Information Administration's forecasted ranges of levelized cost of electricity for new generation resources entering service in 2022, based on current dollars. The referenced coal facility includes carbon capture and storage and is assumed to remove 30% of the plant's CO2 emissions. This chart indicates that gas-fired and renewable generation will be the most economic alternatives as generation portfolio additions. While wind and solar generation may be less expensive on a levelized cost basis than some alternatives, they are intermittent energy sources and cannot be dispatched as needed.



Source: Energy Information Administration

Counterparties

Hoosier Energy members are well served by maintaining a mix of owned and purchased resources. In addition to Duke Indiana purchased power agreements, Hoosier Energy uses PPAs to acquire wind and hydro renewable resources. Hoosier Energy owned generation resources includes a mix of sole and jointly-owned facilities. The only fossil fuel facility that Hoosier Energy does not either share ownership in or sell unit contingent power from is Worthington, the smallest plant in the Hoosier Energy fleet. Hoosier Energy sells unit contingent power to Wabash Valley from Merom through the end of 2017. The G&Ts worked jointly to develop the Lawrence peaking facility in 2005 and purchase the Holland combined-cycle facility in 2009.

Future generation resource options will likely include additional partnerships with existing or new counterparties. Options may include shared ownership or Hoosier Energy taking a partial interest in generation resources owned by other companies.

RESOURCE CHANGES

2017-2018

Capacity needs in 2017-2018 are based upon the following:

- 276 MW unit contingent sale from the Merom Station expires Dec. 31, 2017.
- 25 MW new wind PPA.
- December 31, 2017 expiration of Duke 1 purchase for 100 MW.
- Additional renewable resources including:
  - 10 MW Solar PPA
  - 16 MW Orchard Hills LFG

2019-2024

- 50 MW new wind PPA.
- December 31, 2023 expiration of Duke 2 contract for 100 MW.
- New renewable resource additions are expected in order to comply with the voluntary Board program of 10 percent of member energy requirements by 2025 from renewables.

2025 and beyond

- December 31, 2025 expiration of Duke 3 contract for 50 MW.

ACTION PLAN

MARKET PURCHASES	Use market purchases to meet short term needs during 2017, hedging strategies to reduce market price risk, and monitor markets for opportunities.
DSM, RENEWABLE RESOURCES	Develop DSM resources with members; pursue additional renewable opportunities consistent with the Board Policy renewable portfolio standard of 10 percent of member energy requirements by 2025.
CLEAN POWER PLAN	Preliminary modeling of the CPP indicates the potential for reduction in Merom capacity factors by mid-2020s, when CO2 limits are potentially effective. This requires the addition of more energy resources, including renewables and NGCC in the late 2020s time period.
DEFINE LONG TERM NEEDS	Strategist modeling performed by GDS Associates indicates that the next major resource increment is required in the early-to-mid 2020s. In 2017, Hoosier Energy will perform more detailed analysis as part of a new Integrated Resource Plan (IRP), which will be filed with the IURC. The 2017 IRP will include the latest member load forecast (2017 Power Requirements Study) and assess the economics and timing of existing and new resources. New resource options include short and long-term power purchases, new renewables, and new combined-cycle natural gas generation. Several developers are looking to build new CCs in Indiana.

ACRONYMS USED

CF
Capacity Factor

CO2
Carbon Dioxide

CPP
Clean Power Plan

CT
Combustion Turbine

DSM
Demand Side Management

FERC
Federal Energy Regulatory Commission

GFA
Grandfathered Agreements

G&T
Generation and Transmission

IURC
Indiana Utility Regulatory Commission

LMP
Locational Marginal Price

LRRP
Long Range Resource Plan

MISO
Midcontinent Independent System Operator

NAAQS
National Ambient Air Quality Standards

NGCC
Natural Gas Combined Cycle

NOX
Mono-Nitrogen Oxide

PM2.5
Particulate Matter (<2.5 microns)

PPA
Purchased Power Agreement

PRS
Power Requirement Study

PV
Photovoltaic

SO2
Sulfur Dioxide

UC
Unit Contingent

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