INTRODUCTION

This is the 2017 Electric Integrated Resource Plan ("IRP" or "Resource Plan") of Interstate Power and Light Company ("IPL" or "Company"), an electric utility subsidiary of Alliant Energy Corporation ("Alliant Energy"). IPL's 2017 IRP is being filed pursuant to Chapter 7843 of the Minnesota Public Utilities Commission ("Commission" or "MPUC") rules.[1]

On July 31, 2015, IPL sold its electric retail service territory to Southern Minnesota Energy Cooperative (SMEC) and no longer provides retail electric service to any Minnesota customers. Consequently, IPL is no longer a "public utility" as defined by Minn. Stat. § 216B.02, Subd. 4, but remains a "utility" as that term is defined at Minn. Stat. § 216B.2422 Subd. 1(b). Under Minn. Stat. § 216B.2422 Subd. 2(b), the Commission's order on IPL's 2017 IRP is advisory in nature.[2] Additionally, "the commission shall consider the filing requirements and decisions in any comparable proceedings in another jurisdiction."[3]

This Introduction provides an overview of IPL's system, describes the IRP development, discusses future industry considerations, and explains Minnesota and Iowa regulatory requirements and considerations that are reflected in the IRP.

1.0 The IPL System

IPL is a utility engaged principally in the generation and distribution of electricity and the distribution and transportation of natural gas in selective markets in Iowa. IPL serves approximately 490,000 electric customers and more than 220,000 natural gas customers in over 83 counties in Iowa. IPL is commited to delivering the energy and exceptional service that its customers and communities count on – safely, efficiently and responsibly. IPL's generation portfolio is designed to provide its customers with reliable energy in a cost-effective manner.

IPL's electric demand is projected to grow approximately 318 MW in 20 years from approximately 3,084 MW in 2017 to approximately 3,392 MW in 2037. After reductions for coincident peak with the Midcontinent Independent System Operator, Inc. ("MISO"), IPL's resource adequacy obligations were approximately

[1] The Minnesota Public Utilities Commission's July 7, 2017 Order in E001/RP-17-374 approved IPL's extension request and set a due date of February 1, 2018 for its next Integrated Resource Plan.

[2] The statute does not compel the Commission to approve, reject, or modify the plan. This was also recognized in the Minnesota Public Utilities Commission's (Commission's) June 8, 2015 Order in Docket No. E-001/PA-07-540, stating: "Immediately following the closing, IPL would…cease being a public utility in the state."

[3] This change was also recognized in Staff Briefing Papers filed in Docket No. E-001/PA-07-540 on April 30, 2015 at page 44.

3,188 zonal resource credits ("ZRCs") for the 2017-2018 Planning Year, which is projected to grow approximately 318 ZRCs over the next 20 years.[4]

IPL currently owns generating facilities, which produce approximately 2,738 ZRCs towards MISO resource adequacy requirements for the 2017-2018 Planning Year. IPL's portfolio includes baseload plants, such as the coal-fired Ottumwa Generating Station. IPL's portfolio also includes intermediate or combined cycle units, such as the Emery Generating Station and Marshalltown Generating Station ("MGS"), which provide load following capability and are primarily fueled with natural gas. Combustion turbines and diesel generators at various locations throughout IPL's system provide supplemental energy at points throughout the year when demand is highest. IPL has and continues to invest in wind generation. IPL installed in late 2009 a 200 MW wind farm, Whispering Willow Wind Farm – East, in Franklin County, Iowa, and plans to install up to 1,000 MW of new wind by 2020.[5] IPL also purchased the 99 MW Franklin County windfarm in 2017.

In addition to owned generation, IPL has power purchase agreements (PPAs) for approximately 250 MW from various wind resources as well as for approximately 400 MW from the Duane Arnold Energy Center nuclear plant. IPL also signed a 15-year PPA for the 200 MW Turtle Creek Wind Farm, which has an expected 2018 in-service date.

1.1 Overview of Plan Development

The process that IPL used in developing this plan began with a system load forecast provided to MISO in November 2016. That forecast includes the needs of all firm IPL customers. IPL's firm load forecast at the time of MISO's summer peak, plus a reserve requirement, is matched against existing capacity to determine IPL's preliminary resource needs.

IPL used the Electric Generation Expansion Analysis System ("EGEAS") computer model to study its resource needs. Through the EGEAS model, combinations of existing resources and modeled future resource alternatives are considered when determining the optimal expansion plan. The objective function within EGEAS is to minimize the cumulative present worth of revenue requirements for the 20-year planning period plus a 40-year extension period, while maintaining the MISO coincident peak planning reserve margin (PRM_{ucap}) of 7.8 percent in each year. The ultimate goal is to minimize cost, maximize reliability and minimize risk. Given reasonable assumptions and after careful consideration of costs, reliability and risks, a reference case is constructed.

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[4] A ZRC is equal to one MW of unforced capacity ("UCAP") from a planning resource for a given zone during a specific planning year, as described in the requirements set forth in Module E of the MISO Tariff.

[5] IPL received Iowa Utilities Board (Board) approval in 2016 for up to 500 MW for the New Wind I project by 2020 (Docket No. RPU-2016-0005) and has filed in 2017 to seek Board approval for up to 500 MW for the New Wind II project by 2020 (Docket No. RPU-2017-0002).

Following the construction of the reference case, IPL developed additional scenarios and sensitivities by changing various key input assumptions. Examples of sensitivities include changes to:

- Load forecast;
- Market economy energy availability;
- Fuel costs;
- Capital costs; and
- Wind and solar costs.

IPL performed the sensitivity analysis under three sets of Carbon monetization scenarios: (i) a No Carbon monetization long-term outlook, with adjusted dispatch of existing units so that CO_2 emissions on these units ramp down 34% from 2012 levels by 2030;[6] (ii) a No Carbon monetization long-term outlook without CO_2 ramp down; and (iii) Wood Mackenzie's fuel and market energy price forecasts, including a ramping carbon price.

1.2 Future Industry Considerations

The utility industry is changing. More customers expect electricity from cost-effective, less carbon-intensive, cleaner sources of power like wind and natural gas. IPL is modernizing its grid and generation fleet to meet those demands. As part of our strategy to advance cleaner energy and optimize our generation portfolio, IPL has reduced its reliance on coal-fired facilities, while increasing our use of natural gas-fired generation and renewable resources.

The ability of new wind resources to qualify for federal production tax credits ("PTCs") before the PTCs phase out entirely has energy value in the form of substantial fuel cost savings. Capturing 100% of the PTC benefits before those PTCs expire will help IPL to manage its customers' energy costs in an environmentally responsible manner.

1.3 Iowa Considerations

The following are resource planning considerations in Iowa that are reflected in the IRP:

1.3.1 Nuclear Purchase

On August 7, 2012, IPL filed an amendment in Docket No. SPU-2005-0015 to continue purchasing capacity and energy from NextEra's Duane Arnold Energy Center (DAEC) for 2014 through 2025. The Board issued an Order on January 31, 2013, allowing IPL to amend the contract and continue purchases from the DAEC. IPL's 2017 IRP likewise includes the continued purchase from DAEC through 2025.

[6] Due to the uncertainty of carbon regulation over the long term, this CO_2 rampdown future acts as a proxy for potential future federal government implementation of a comprehensive policy to regulate carbon dioxide.

1.3.2 Marshalltown Generating Station (MGS)

On November 14, 2012, IPL filed the necessary applications with the Board that would allow IPL to build the MGS, an approximate 630 MW natural gas-fired, combined cycle-generating unit. On November 8, 2013, the Board issued an Order in Docket Nos. GCU-2012-01 and RPU-2012-0003 granting IPL's application. IPL placed MGS into service on April 1, 2017. IPL's 2017 IRP reflects the installation of MGS as a committed resource.

1.3.3 New Wind I

IPL received Board approval in 2016 for up to 500 MW for the New Wind I project by 2020 (Docket No. RPU-2016-0005).

1.3.4 Franklin County Wind Farm

On April 1, 2017, IPL acquired the 99 MW Franklin County Wind Farm.

1.3.5 New Wind II

In 2017, IPL requested advance ratemaking principles for up to 500 MW of additional wind for the New Wind II project by 2020 (Docket No. RPU-2017-0002).

1.4 Commission Requirements

In constructing this IRP, IPL was mindful of Commission requirements and prior Commission statements. This section responds to those requirements and statements.

1.4.1 Requirements as a Result of 2014 Resource Plan

On March 31, 2014, IPL filed a resource plan with the Commission for the 2014-2029 planning period. At the time of its application, IPL was still a public utility, as defined by Minn. Stat. § 216B.02, Subd. 4. On August 7, 2015, the Commission issued its "Order Approving Resource Plan" in Docket No. E-001/RP-14-77, which approved IPL's resource plan. The order included the following order points to which IPL responds.

- *The Commission finds that IPL's resource plan should use short term power purchase agreements to cover capacity deficits until IPL's new Marshalltown combined cycle unit comes on-line in 2017.*

IPL's Marshalltown combined cycle natural gas facility went into service in April 1, 2017. Since the 2014 IRP, IPL arranged capacity purchases and sales on a zonal basis, as needed, through the annual MISO Planning Resource Auction to satisfy Planning Reserve Margin Requirements.

- *The Commission finds that the record demonstrates, at this time, that IPL's resource plan should acquire approximately 200 megawatts of wind resources in the 2017-2019 timeframe.*

As a result of a 2015 RFP process, IPL entered into a 15-year PPA for the 200 MW Turtle Creek Wind Farm in Mitchell County, Iowa, which is expected to become commercially operational in 2018.

- *The Commission finds that IPL's proposed amount of DSM, which on an annual basis averages 1.44 percent of IPL's retail sales, is reasonable for planning purposes.*

IPL no longer serves retail electric customers in Minnesota; therefore, IPL does not offer DSM programs in Minnesota.

- *The Commission finds that IPL has monitored the important environmental regulations that will impact its resources and operations.*

Sections 5.5 and 5.6 of this 2017 IRP provide updated discussion of IPL's monitoring of important environmental regulations that will impacts resources and operations.

- *IPL shall file its next resource plan on July 1, 2017.*

On May 1, 2017, IPL filed a request for extension for filing its resource plan in Docket No. E001/RP-17-374. On June 9, 2017, the Minnesota Department of Commerce ("DOC") recommended setting the filing date to February 1, 2018. The Commission adopted the DOC's recommendation in a July 7, 2017 order.

1.4.2 Other Orders and Notices

On August 5, 2013, in Docket No. E001/RP-08-673 (and others), the Commission issued a "Notice Of Information In Future Resource Plan Filings" regarding "Information In Future Resource Plan Filings." IPL responds below to certain items outlined in the Commission's Notice.

- *Please take notice that the Commission expects utilities to include in their resource plans filed after August 1, 2013 an explanation how the resource plan helps the utility achieve the greenhouse gas reduction goals, renewable energy standard, and solar energy standard as listed in the above-referenced legislation. Parties should also be prepared to discuss the matter in comments.*

IPL is not an "electric utility" as defined in Minn. Stat. 216B.1691 Subd. 1(b), and therefore, is not subject to Minnesota's Renewable Energy Standard ("RES")[7] and Solar Energy Standard compliance.

- *In addition, utilities should consider adding to their initial resource plan filings the supplemental information listed at page 4 of the Commission's May 10, 2013 Order regarding its completeness review of MP's resource plan in Docket E015/RP-13-53.*

As noted previously, IPL recently installed a new approximately 630 MW natural gas combined cycle and entered into a new 200 MW wind PPA. In addition, the Board, after a review of a detailed record, granted advanced ratemaking principles for the construction of up to 500 MW of wind, and IPL is seeking advanced ratemaking principles for up to another 500 MW of wind. IPL has tailored its filing in light of the foregoing and the advisory nature of the the Commission's review of IPL's 2017 IRP.

[7] Staff Briefing Papers issued July 1, 2015 in Docket No. E001/RP-14-77 at page 14 noted that "…SMEC will be responsible for satisfying the Minnesota RES, and, therefore, IPL's future resource plan filings will not include SMEC's plans for RES compliance."