

## Staff Briefing Papers

Meeting Date	February 7, 2019	Agenda Item *1
Company	Interstate Power and Light Company (IPL)	
Docket No.	<b>E001/RP-17-374</b>	
	<b>In the Matter of Interstate Power and Light Company's 2017 Integrated Resource Plan</b>	
Issues	Should the Commission accept IPL's 2017 Integrated Resource Plan (IRP)?	
	When should IPL file its next resource plan?	
Staff	Sean Stalpes <a href="mailto:sean.stalpes@state.mn.us">sean.stalpes@state.mn.us</a>	651-201-2252

✓ Relevant Documents	Date
Interstate Power and Light, <i>Resource Plan</i>	February 1, 2018
Department of Commerce, <i>Comments</i>	May 24, 2018
Interstate Power and Light, <i>Reply Comments</i>	July 18, 2018
Interstate Power and Light, <i>Notice of Changed Circumstances</i>	August 14, 2018
Interstate Power and Light, <i>Updated Load and Capability Projection</i>	August 14, 2018

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

## I. Statement of the Issues

Should the Commission accept Interstate Power and Light's (IPL) 2017-2037 Integrated Resource Plan (IRP)?

When should IPL file its next IRP?

## II. Introduction

Resource plans are governed by section 216B.2422 of the Minnesota Statutes and Chapter 7843 of the Minnesota Rules. Generally, a utility is required to submit a resource plan every two years.<sup>1</sup> This resource plan should set forth a list of resource options the utility could use to meet its resource obligations during the subsequent 15-year period.<sup>2</sup> (However, IPL's IRP is a 20-year plan.)

To support this list of resource options, the utility must submit detailed information supporting its decisions, including but not limited to (i) options considered, (ii) descriptions of the process and overall analytical techniques, (iii) a proposed five-year action plan, (iv) a narrative description of why the plan is in the public interest, and (v) a nontechnical summary explaining the five-year action plan and the likely impact of the five-year action plan on customer rates.<sup>3</sup>

One important aspect of IPL's resource plan, as well as the Commission's role in its evaluation, is how IPL is now defined under Minn. Stat. § 216B.2422 (the IRP Statute) as a result of its sale of retail electric assets to Southern Minnesota Energy Cooperative (SMEC) in 2015.<sup>4</sup> It is important because historically, IPL has filed resource plans with the Commission as a rate-regulated "public utility." IPL's 2017 IRP is the first IRP it has filed where the Company is no longer a "public utility," and this is because IPL is now a wholesale power provider to SMEC.<sup>5</sup>

Notably, the need to file IRPs is not limited to a "public utility;" under Minn. Stat. § 216B.2422, subd.1(b), the requirement applies to a "utility," which is defined as:

an entity with the capability of generating 100,000 kilowatts or more of electric power and serving, **either directly or indirectly**, the needs of 10,000 retail customers in Minnesota. Utility does not include federal power agencies. (Emphasis added.)

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<sup>1</sup> Minn. R. 7843.0300 subp. 2.

<sup>2</sup> Minn. R. 7843.0100 subp. 6, 9.

<sup>3</sup> Minn. R. 7843.0400 subp. 3, 4.

<sup>4</sup> Docket No. E-001/PA-07-540, *In the Matter of a Request for the Approval of the Asset Purchase and Sale Agreement Between Interstate Power and Light Company and Southern Minnesota Energy Cooperative.*

<sup>5</sup> SMEC represents approximately 5-6% of IPL's load.

Because IPL sold its electric retail service territory to SMEC, the Company no longer provides retail electric service to any Minnesota customers and is no longer a “public utility” under Minn. Stat. § 216B.02, subd. 4, which is defined as:

persons, corporations, or other legal entities ... now or hereafter operating, maintaining, or controlling in this state equipment or facilities for furnishing at retail natural, manufactured, or mixed gas or electric service to or for the public or engaged in the production and retail sale thereof but does not include (1) a municipality or a cooperative electric association ... .

IPL remains a “utility,” however, because IPL has a generating capability of more than 100,000 kilowatts, and it will continue to “indirectly” serve the wholesale electric power needs of SMEC and SMEC member cooperatives, which represent approximately 42,000 current retail customers in 19 counties in Minnesota.<sup>6</sup> While in Iowa IPL is a retail electric service provider, in Minnesota, IPL is effectively a wholesale merchant power producer. It appears IPL must still file an IRP, but the Commission’s role with respect to the IRP is advisory in nature. Consequently, IPL’s resource plan (like Great River Energy’s, for instance) is not subject to the “approve, reject, or modify” language of the IRP Statute.

Furthermore, IPL is no longer obligated to comply with Minnesota energy policies such as the state’s Greenhouse Gas Reductions Goal<sup>7</sup> and Renewable Energy Standard (RES),<sup>8</sup> both of which are required to be considered as part of a utility’s resource plan filing under the IRP Statute.<sup>9</sup> As staff explained in its April 30, 2015 staff briefing papers in the Asset Purchase and Sale Agreement docket,<sup>10</sup> SMEC assumed some statutory compliance obligations as a result of the transaction, thereby removing IPL’s responsibility to include them in resource planning:

if the transaction is approved as proposed by the Joint Petitioners, SMEC will become subject to the RES (Renewable Energy Standard) while the responsibility for filing resource plans will remain with IPL. Because IPL will no longer be providing service at retail in Minnesota, the Commission’s Order with respect to its resource plan will become advisory.

More notable, but not disputed by parties at this time, is SMEC’s request that it be considered the entity subject to the RES even though it owns no generation or transmission facilities. The RES applies to all “generation and transmission cooperative electric associations.” In comments, the Joint Petitioners state that SMEC meets this definition because it will be supplying the generation and transmission requirements for SMEC Cooperative members and there is no requirement in statute that a G&T cooperative own facilities.

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<sup>6</sup> Docket No. 07-540, Commission Order at 2 (June 8, 2015).

<sup>7</sup> Minn. Stat. § 216H.02.

<sup>8</sup> Minn. Stat. § 216B.1691.

<sup>9</sup> Minn. Stat. § 216B.2422, subd. 4(1).

<sup>10</sup> Docket No. E001/PA-07-540.

The Commission approved the Asset Purchase and Sale Agreement between IPL and SMEC on June 8, 2015. The Commission's order recognized that IPL would no longer be a public utility:

Immediately following the closing, IPL would withdraw from providing retail electric service in Minnesota and cease being a public utility in the state.<sup>11</sup>

The Commission's order did not, however, explicitly find that IPL no longer has the responsibility under statute to file IRPs following the sale of assets. Nor did the order outline what future IRPs shall include in light of the fact that SMEC will be providing service to IPL's former retail customers. IPL did address this issue, however, in its November 10, 2014 comments in the Asset Purchase and Sale Agreement docket; the Company explained that it did not make sense for SMEC to file a resource plan:

The Department raised the possibility that SMEC would be the entity responsible for filing IRPs with appropriate assistance to be provided by IPL.<sup>12</sup> While this approach would be acceptable to SMEC and IPL, some factors support having IPL be both the entity responsible and the entity that performs the IRP, although IPL will not meet the definition of a "public utility" following the closing of the Transaction<sup>13</sup> ... Filing an IRP would be not be feasible for SMEC because it does not own generation facilities which are the focal point of IRP filings, and there would be no benefit for SMEC to simply adopt an IRP prepared by IPL.<sup>14</sup>

Based on these comments, there did not seem to be a recognition that upon the transfer of its retail assets to SMEC, IPL would still have a *statutory* obligation to file an IRP; rather, it appears that IPL and SMEC agreed that, for *practical* (rather than statutory) reasons, the Company was willing to continue to file IRPs relating to the portion of SMEC's load that IPL's power would serve.

Staff provides this context to allow for a more holistic view of IPL's resource plan, in conjunction with how the IRP Statute and the Commission's IRP rules may apply to IPL. Staff will explore this issue further in the "Staff Discussion" section of these briefing papers.

Finally, staff notes that IPL did not model some of the Minnesota-specific statutory requirements as part of its scenario analysis, such as "long range emissions reduction planning"<sup>15</sup> (as defined by the Minnesota Greenhouse Gas Goal<sup>16</sup>), as well as the inclusion of

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<sup>11</sup> Docket Nos. E001/PA-07-540 and E001/PA-14-322, Commission order, at 3 (June 8, 2015).

<sup>12</sup> Docket No. E001/PA-14-322, Department of Commerce Reply Comments, at 20 (October 6, 2014).

<sup>13</sup> Docket No. E001/PA-14-322, IPL comments, at 24 (November 10, 2014).

<sup>14</sup> Docket No. E001/PA-14-322, IPL comments, at 25 (November 10, 2014).

<sup>15</sup> Minn. Stat. § 216B.2422, subd. 2(c)

<sup>16</sup> Minn. Stat. § 216H.02, subd. 1.

the Commission’s recently updated environmental externality values.<sup>17</sup> In part this is because, prior to filing its 2017 resource plan, IPL reached out to the Department and Commission staff to inquire whether all Minnesota-related policies needed to be modeled, since doing so would have been laborious as well as irrelevant to IPL’s long-term plan. All agreed it would be appropriate for IPL’s filing to be streamlined to some extent and limited to IPL’s statutory requirements in Iowa. Nevertheless, IPL’s petition is still largely the same as previous IRP filings (it contains a nontechnical summary, as well as sections on the load forecast, modeling results, a proposed action plan, a discussion of environmental regulations, and so forth).

### III. Company Background

#### A. Load and Capability

##### 1. Load

IPL serves approximately 490,000 electric customers and more than 220,000 natural gas customers in over 83 counties in Iowa. As shown in Table 2.1.1 of IPL’s petition, below, IPL’s 2019 peak electric demand is approximately 3,065 MW, which is projected to grow to approximately 3,392 MW in 2037:<sup>18</sup>

**Table 2.1.1**  
**IPL Base Forecast: Energy and Internal Peak Demand**

Year	Energy (GWH)	Internal Peak Demand (MW)
2017	17,081	3,083.7
2018	16,858	3,048.1
2019	16,788	3,065.0
2020	16,925	3,075.3
2021	17,031	3,091.0
2022	17,145	3,108.1
2023	17,214	3,126.0
2024	17,335	3,144.1
2025	17,459	3,162.4
2026	17,585	3,180.9
2027	17,676	3,199.5
2028	17,768	3,218.2
2029	17,860	3,237.0
2030	17,953	3,256.0
2031	18,046	3,275.0
2032	18,139	3,294.1
2033	18,233	3,313.4
2034	18,328	3,332.8
2035	18,423	3,352.3
2036	18,519	3,371.9
2037	18,615	3,391.6

As a member of Midcontinent Independent System Operator, Inc. (MISO), IPL’s resource adequacy requirement is based on a forecast of IPL’s annual peak demand at the time of the MISO system peak (i.e. a “coincident peak” demand forecast). IPL is required to maintain a planning reserve margin (PRM) above the Company’s load at the time of MISO’s system peak, which effectively lowers its planning requirements relative to applying a PRM at IPL’s own peak.

<sup>17</sup> Minn. Stat. § 216B.2422, subd. 3.

<sup>18</sup> For comparison purposes, Xcel Energy’s peak demand is approximately 9,500 MW, and Minnesota Power’s peak demand is approximately 1,800 MW.

IPL assumed in its IRP that it will maintain MISO’s 7.8% UCAP (unforced capacity) PRM, which was the PRM for MISO’s 2017-2018 Planning Year,<sup>19</sup> throughout the IRP timeframe. However, as noted, since IPL is only required to maintain reserves above its MISO-coincident peak, and because IPL’s total obligation is less than 3,065 MW at the MISO peak, the net load incorporated into the capacity expansion model is adjusted downward.

IPL’s “coincidence factor” is approximately 96%, which means that IPL’s MISO-coincident demand is about 4% lower than its own peak. This 4% diversity factor reduces IPL’s obligation by approximately 124-137 MW per year over the planning period. This is shown by Table 4.2.2.1 of IPL’s petition. The table shows that IPL’s total obligation (the blue shaded area labeled ZRC, or Zonal Reserve Credit, Obligation) is about 3,169 MW in 2019, increasing to about 3,507 MW by 2037.

Table 4.2.2.1: EGEAS Demand and Energy Forecast, Base Forecast

Year	IPL Energy, GWH	IPL Internal Peak Demand (with TM losses)	load factor	reduction for MISO Coincident (95.96%)	reduction for 2.71% TM losses (added later)	Adj. Net MISO Coincident Demand w/o TM losses	Weighted LBA TM losses	MISO Planning Reserve Margin	ZRC Obligation	EGEAS Reserve Margin: ZRC obligation / IPL adj. net MISO Coincident Peak - 1
2017	17,081.0	3,083.7	63%	-124.5	-79.5	2,879.7	2.71%	7.80%	3188.4	10.72%
2018	16,858.0	3,048.1	63%	-123.1	-78.7	2,846.2	2.71%	7.80%	3151.4	10.72%
2019	16,788.0	3,065.0	63%	-123.8	-79.0	2,862.2	2.71%	7.80%	3169.1	10.72%
2020	16,925.0	3,075.3	63%	-124.2	-79.3	2,871.8	2.71%	7.80%	3179.7	10.72%
2021	17,031.0	3,091.0	63%	-124.8	-79.7	2,886.5	2.71%	7.80%	3196.0	10.72%
2022	17,145.0	3,108.1	63%	-125.5	-80.2	2,902.4	2.71%	7.80%	3212.6	10.72%
2023	17,214.0	3,126.0	63%	-126.3	-80.7	2,919.0	2.71%	7.80%	3232.0	10.72%
2024	17,335.0	3,144.1	63%	-127.0	-81.1	2,936.0	2.71%	7.80%	3250.8	10.72%
2025	17,459.0	3,162.4	63%	-127.7	-81.5	2,953.2	2.71%	7.80%	3269.8	10.72%
2026	17,585.0	3,180.9	63%	-128.5	-82.0	2,970.5	2.71%	7.80%	3289.0	10.72%
2027	17,676.0	3,199.5	63%	-129.2	-82.6	2,987.7	2.71%	7.80%	3308.0	10.72%
2028	17,768.0	3,218.2	63%	-130.0	-82.9	3,005.3	2.71%	7.80%	3327.5	10.72%
2029	17,860.0	3,237.0	63%	-130.7	-83.5	3,022.8	2.71%	7.80%	3346.9	10.72%
2030	17,953.0	3,256.0	63%	-131.5	-84.0	3,040.5	2.71%	7.80%	3366.5	10.72%
2031	18,046.0	3,275.0	63%	-132.3	-84.4	3,058.3	2.71%	7.80%	3386.2	10.72%
2032	18,139.0	3,294.1	63%	-133.0	-85.0	3,076.1	2.71%	7.80%	3405.9	10.72%
2033	18,233.0	3,313.4	63%	-133.8	-85.5	3,094.1	2.71%	7.80%	3425.8	10.72%
2034	18,328.0	3,332.8	63%	-134.6	-86.0	3,112.2	2.71%	7.80%	3445.9	10.72%
2035	18,423.0	3,352.3	63%	-135.4	-86.5	3,130.4	2.71%	7.80%	3466.0	10.72%
2036	18,519.0	3,371.9	63%	-136.2	-87.0	3,148.7	2.71%	7.80%	3486.3	10.72%
2037	18,615.0	3,391.6	63%	-137.0	-87.4	3,167.2	2.71%	7.80%	3506.8	10.72%

Entered in EGEAS ORT file

Modeled in EGEAS as demand side resource

EGEAS Net Load

EGEAS Reserve Margin Requirement (applies to Net Load)

## 2. Capability

IPL expects to have sufficient resources to cover its total obligation through 2024. Of note, in its initial IRP filing, IPL projected surplus capacity through 2025; however, on August 13, 2018, IPL filed a Notice of Changed Circumstances (NoCC), citing two main factors which moved forward, by one year (from 2026 to 2025), the year when IPL expects a capacity shortfall:

<sup>19</sup> The required installed capacity reserve margin is 17.1% and the required unforced capacity reserve margin is 8.4% for the June 1, 2018 through May 31, 2019 MISO planning year.

First, IPL and NextEra Energy Duane Arnold, LLC agreed to shorten by five years the term of the current PPA for energy and capacity from the nuclear Duane Arnold Energy Center (DAEC). DAEC provides to IPL about 430 MW of capacity and 3,385 GWh of energy per year.<sup>20</sup>

Second, IPL accelerated the retirement date for the coal-fired M.L. Kapp Generating Station Unit 2; Kapp #2 was retired in June 2018, but in the IRP, it was projected to provide approximately 102 MW of capacity and 1.8 GWh of energy per year.

As noted, together these changes advanced IPL's capacity shortfall by one year, from 2026 to 2025. Below, staff shows IPL's load and capability (L&C) from its initial IRP filing and its updated position from its August 2018 NoCC. Staff added two red boxes highlight this change.

### Original L&C, Initial Filing (through 2026)

PUBLIC VERSION

IPL 2017 IRP

Load and Capability Projection, No generic additions to maintain reserve margin requirements

Load:	IPL All Zones	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Non-Coincident Peak		3083.7	3048.1	3065.0	3075.3	3091.0	3108.1	3126.0	3144.1	3162.4	3180.9
Coincident Peak	95.96%	2959.2	2924.9	2941.2	2951.1	2966.2	2982.6	2999.7	3017.1	3034.7	3052.5
Less Trans Loss Factor	2.71%	2879.7	2846.2	2862.2	2871.8	2886.5	2902.4	2919.0	2936.0	2953.2	2970.5
Full Responsibility Sales											
Full Responsibility Purchases											
Adjusted Net Demand		2879.7	2846.2	2862.2	2871.8	2886.5	2902.4	2919.0	2936.0	2953.2	2970.5
Weighted LBA TM losses		78.0	77.1	77.6	77.8	78.2	78.7	79.1	79.6	80.0	80.5
Planning Reserve Margin	7.80%	230.7	228.0	229.3	230.1	231.2	232.5	233.9	235.2	236.6	238.0
IPL Obligation		3188.4	3151.4	3169.1	3179.7	3196.0	3213.6	3232.0	3250.8	3269.8	3289.0
IPL Total Resources		3473.6	3362.3	3589.1	3670.3	3671.0	3659.7	3662.1	3660.0	3471.3	3069.8
IPL Position (Long/short)		285.1	211.0	420.1	490.7	475.1	446.1	430.1	409.2	201.5	(219.2)
Effective Reserve Margin		17.4%	15.0%	22.1%	24.4%	23.8%	22.8%	22.1%	21.4%	14.4%	0.6%
Effective Reserve Margin (EGEAS)		20.62%	18.13%	25.40%	27.81%	27.18%	26.09%	25.46%	24.66%	17.54%	3.34%

### Updated L&C, Notice of Changed Circumstances (through 2026)

PUBLIC VERSION

IPL 2017 IRP

Load and Capability Projection, No generic additions to maintain reserve margin requirements

Load:	IPL All Zones	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Non-Coincident Peak		3083.7	3048.1	3065.0	3075.3	3091.0	3108.1	3126.0	3144.1	3162.4	3180.9
Coincident Peak	95.96%	2959.2	2924.9	2941.2	2951.1	2966.2	2982.6	2999.7	3017.1	3034.7	3052.5
Less Trans Loss Factor	2.71%	2879.7	2846.2	2862.2	2871.8	2886.5	2902.4	2919.0	2936.0	2953.2	2970.5
Full Responsibility Sales											
Full Responsibility Purchases											
Adjusted Net Demand		2879.7	2846.2	2862.2	2871.8	2886.5	2902.4	2919.0	2936.0	2953.2	2970.5
Weighted LBA TM losses		78.0	77.1	77.6	77.8	78.2	78.7	79.1	79.6	80.0	80.5
Planning Reserve Margin	7.80%	230.7	228.0	229.3	230.1	231.2	232.5	233.9	235.2	236.6	238.0
IPL Obligation		3188.4	3151.4	3169.1	3179.7	3196.0	3213.6	3232.0	3250.8	3269.8	3289.0
IPL Total Resources		3473.6	3362.3	3589.1	3701.3	3304.0	3292.7	3295.1	3300.8	3113.1	3114.6
IPL Position (Long/short)		285.1	211.0	420.1	521.7	108.1	79.1	63.1	50.0	(157.7)	(174.3)
Effective Reserve Margin		17.4%	15.0%	22.1%	25.5%	11.4%	10.5%	9.9%	9.5%	2.6%	2.1%
Effective Reserve Margin (EGEAS)		20.62%	18.13%	25.40%	28.89%	14.47%	13.45%	12.88%	12.43%	5.38%	4.85%

<sup>20</sup> Staff notes that, according to Table 2.1.1 on page 4 of the briefing papers, IPL's energy requirements are about 17,000 GWh; this means that DAEC provides approximately 20% of IPL's energy.



## *B. IPL's Recent Resource Acquisitions*

IPL has recently made a number of investments to transform its generation fleet. This section will briefly discuss a few of IPL's recent resource acquisitions, which will enable the Company to continue on its path of significantly reducing its carbon emissions. IPL is pursuing this through a combination of retiring or refueling a number of its coal-fired assets, adding efficient natural gas generation, and bringing online a substantial amount of new wind.

### 1. Marshalltown Generating Station (MGS)

On November 8, 2013, the Iowa Utilities Board (IUB) issued an order in Docket Nos. GCU-2012-01 and RPU-2012-0003 granting IPL's application to build the Marshalltown Generating Station (MGS), an approximately 630 MW, natural gas combined cycle unit in Marshalltown, Iowa. IPL placed MGS into service on April 1, 2017.

As noted above, for some time, IPL has been in the process of planning the retirement of many of its older, smaller, and less-efficient intermediate and peaking units. The retirement of these units were timed to align with bringing MGS into service, and they include: its Centerville combustion turbines (CT); Burlington CTs; Grinnell CTs; Red Cedar CT; and Fox Lake Units 1 & 3.

### 2. Turtle Creek Wind Farm

In 2016, IPL entered into a PPA for the 200 MW Turtle Creek Wind Farm, located in Mitchell County, Iowa. The Turtle Creek wind facility began commercial operations December 27, 2018.

### 3. Franklin County Wind Farm

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

### 4. New Wind I

On July 27, 2016, IPL filed an Application for Approval of Ratemaking Principles to the IUB for its 500 MW New Wind I Project,<sup>21</sup> which the IUB granted on October 25, 2016. In that docket, IPL performed capacity expansion modeling showing that 300 MW of wind was selected in both 2018 and 2019.<sup>22</sup>

Of note, New Wind I is a combination of projects, not a single wind farm. The New Wind I Project includes the Upland Prairie (300 MW) and Golden Plains (200 MW) facilities. IPL entered into a Purchase and Sale Agreement for the acquisition of Upland Prairie in March 2017. IPL entered into an Asset Purchase Agreement for the acquisition of the Golden Plains in December 2017.

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<sup>21</sup> Iowa Utilities Board Docket No. RPU-2016-0005.

<sup>22</sup> Iowa Utilities Board Docket No. RPU-2016-0005, IUB Order at 4 (October 25, 2016).



## 5. Committed Resources Since the IRP Filing

Staff notes that all four of the resource acquisitions listed above are fixed into the IRP model as “committed resources” in the first few years of the planning period. However, because IPL’s fleet transformation has been ongoing, and since IPL filed its resource plan in February 2018, there are some facilities in the proposed plan listed as “generic units” that are now committed resources which been approved by the IUB. For example, IPL’s proposed plan includes 500 MW of generic wind in year 2020, and these units became its 500 MW New Wind II Project.

## 6. New Wind II

On August 3, 2017, IPL filed its Request for a Determination of Ratemaking Principles for up to 500 MW of additional wind for the New Wind II project by 2020<sup>23</sup>—to be clear, this means that New Wind I and II comprise a 1 gigawatt wind expansion plan.

Like New Wind I, the additional 500 MW of wind from New Wind II will come from a combination of projects.<sup>24</sup> However, for New Wind II, IPL is considering using newer turbines with larger rotor spans, which increases the energy output at each of the sites.<sup>25</sup>

The New Wind II Project includes the English Farms (170 MW), Richland (130 MW), and Whispering Willows North (200 MW) facilities. Construction of the five projects which make up New Wind I and II will be done in phases, but IPL expects all projects to be in-service by the end of 2020. This is consistent with the generic units proposed in the IRP.

## 7. 200 MW of Generic Wind in 2021

In addition to the 500 MW of generic wind in 2020—which, as staff explained, is the New Wind II Project—there is also an additional 200 MW of new generic wind in 2021. The 200 MW of new wind in 2021 is probably best viewed not as a specific acquisition target, but as a modeling result showing that even more PTC-available wind was cost-effective. Nonetheless, IPL has secured additional wind contracts beyond New Wind I and II, which the Company discussed in its August 2018 NoCC.

The NoCC filing explained that, in addition to finalizing New Wind II, “IPL has negotiated four new 20-year term wind PPAs, two commencing in 2020 and two in 2021.”<sup>26</sup> In other words, IPL has entered into four new wind contracts in addition to the five projects that comprise New Wind I and II. Like New Wind II, collectively these PPAs are consistent with the additional generic wind in the IRP’s five-year action plan.

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<sup>23</sup> Iowa Utilities Board Docket No. RPU-2017-0002.

<sup>24</sup> Iowa Utilities Board Docket No. RPU-2016-0005

<sup>25</sup> According to IPL’s August 30, 2018 semi-annual report in IUB Docket No. RPU-2017-0002, IPL noted that the Company has studied the benefits of using the newly offered GE 2.5-127 turbines and is planning to use them where schedule and sites are suitable.”

<sup>26</sup> IPL Notice of Changed Circumstances, at 2 (August 13, 2018).

What this means for the IRP is that all of IPL’s “generic” wind resources proposed in the five-year action plan have effectively become “committed resources” approved by the IUB. As a result, IPL has no generic resources in its 2017-2021 five-year action plan; rather, IUB has already approved these resources on a case-by-case basis. (There are, however, two 50 MW solar additions in 2022 and 2023, which were selected because they lower IPL’s system energy costs; staff is not aware of any solar acquisitions of this size proposed to the IUB.)

### C. IPL’s Iowa Emissions Plan and Budget

Iowa Code § 476.6(20) requires Iowa’s rate-regulated utilities to develop multi-year emissions plans and budgets for managing regulated emissions from coal-fired facilities in a cost-effective manner, with updates filed every two years. On March 30, 2018, IPL filed a proposed Electric Emissions Plan and Budget (EPB) for planning years 2019 and 2020 with the IUB.<sup>27</sup> The IUB approved IPL’s 2018 EPB on August 22, 2018.

IPL currently operates the following coal-fueled electric generating units (EGUs):<sup>28</sup>

- Burlington Unit 1 – 212 MW facility located in Burlington, IA.
- Lansing Unit 4 – 274.5 MW facility located in Lansing, IA.
- Ottumwa Unit 1 – 725.9 MW facility located in Ottumwa, IA. (This is a jointly owned unit. IPL owns 48% and Mid-American Energy Company owns 52%.)
- Prairie Creek Unit 3 – 50 MW cogeneration facility located in Cedar Rapids, IA.

According to the Company’s 2018 EPB filed with the IUB, since 2008, IPL has reduced CO<sub>2</sub> emissions by approximately 38%, mercury emissions by approximately 95%, nitrogen oxide (NO<sub>x</sub>) emissions by approximately 72%, and sulfur dioxide (SO<sub>2</sub>) emissions by approximately 82%. Building on this progress, IPL proposed the following actions that are either ongoing or planned:

Unit	Project
Burlington Unit 1	Conversion to Natural Gas
Lansing Unit 4	Replacement of the 3 <sup>rd</sup> Layer of Catalyst for the SCR System Baghouse Bag Replacement Project
Ottumwa Unit 1	Installation of a SCR System

Not listed in the figure above is Prairie Creek Unit 3. According to IPL’s resource plan, IPL will fuel switch Prairie Creek Unit 3 to natural gas in 2025.<sup>29</sup>

<sup>27</sup> IUB Docket No. EPB-2018-0150.

<sup>28</sup> The four coal units listed above is not a complete list of IPL’s total coal-fired capacity. IPL also has a 28% share of George Neal Unit 3, a 26% share of George Neal Unit 4, and a 4% share of Louisa Unit 1, which are coal units operated by Mid-American.

<sup>29</sup> Resource Plan, Section 4 (Resource Plan), at 4-3.

#### IV. Petition

##### A. Proposed Plan

At the beginning of Section 4 of IPL's IRP, "Resource Plan," the Company states:

With the addition of the Marshalltown Generating Station and IPL's 500 MW New Wind I Project, IPL does not project a capacity deficit until 2026. IPL assumes, for planning purposes, the retirement of [TRADE SECRET DATA EXCISED]. Also for planning purposes, IPL assumes that the Duane Arnold Energy Center ("DAEC") nuclear PPA expires at the end of the current term on December 31, 2025. IPL projects its capacity deficit to increase from approximately 300 zonal resource credits (ZRCs) in 2026 to 560 ZRCs in 2034.<sup>30</sup>

As discussed previously, IPL's August 2018 NoCC and the accompanying updated Load and Capability Projection show that IPL's resource additions and removals have changed its capacity position to some extent; the DAEC PPA will expire five years earlier, and Kapp #2 has been retired already, although New Wind II and four additional 20-year wind PPAs will provide some additional accredited capacity to offset these removals. On the whole, IPL does not believe these changed circumstances will significantly affect its 2017 IRP.<sup>31</sup>

In developing its proposed plan, IPL used the Electric Generation Expansion Analysis System (EGEAS) model to evaluate combinations of alternatives to develop an optimized expansion plan. Like the Strategist model that many Minnesota utilities use to develop their IRPs, EGEAS is also a capacity expansion model that considers and selects an expansion plan that minimizes the present value of revenue requirements (PVRR) over the planning timeframe. IPL's model was set up to consider a 20-year planning period (2017-2037), plus an extension period.

For its 2017 IRP, IPL ran three scenarios, each with a different methodology for carbon pricing,<sup>32</sup> stressed across 26 sensitivities (for a total of 78 cases). These sensitivities included: high and low load forecasts, six natural gas price assumptions, four wind price assumptions, and four solar price assumptions.

Many of the sensitivity runs produced similar results, indicating the least-cost expansion plan was fairly clear; for instance, 500 MW of new wind in 2020 was selected in 73 of the 78 cases. And, in the long-term, IPL found that "the reference cases for all carbon scenarios call for new renewables (wind and solar), natural gas-fired resources (combustion turbine and combined cycle), and one year capacity purchases."<sup>33</sup> Specifically, under all three carbon futures and the sensitivity analysis, several commonalities emerged, including:

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<sup>30</sup> Resource Plan, Section 4 (Resource Plan), at 4-1.

<sup>31</sup> IPL Notice of Changed Circumstances, at 2.

<sup>32</sup> The modeling includes no externalities (besides the CO<sub>2</sub> monetization in the "c" series) as there is no explicit externality pricing in Iowa.

<sup>33</sup> Resource Plan, Section 4, Page 4-5.



YEAR	1 yr pk	CT-88	CT-192	CC-300	CC-605	Wind	Solar	Nuclear
	pwr purch							
	1	2	3	4	5	6	7	8
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	500	0	0
2021	0	0	0	0	0	200	0	0
2022	0	0	0	0	0	0	50	0
2023	0	0	0	0	0	0	50	0
2024	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0
2026	0	0	191.7	0	0	0	0	0
2027	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	50	0
2029	0	0	0	0	0	0	50	0
2030	0	0	0	0	0	0	50	0
2031	0	0	0	0	0	0	50	0
2032	50	0	0	0	0	0	50	0
2033	50	0	0	0	0	0	0	0
2034	100	0	0	0	0	0	0	0
2035	0	0	0	0	604.701	0	0	0
2036	0	0	191.7	0	0	0	50	0
2037	0	0	0	0	0	0	0	0
TOTAL	200	0	383.4	0	604.701	700	400	0

As can be seen, the capacity need that eventually emerges in 2026 is filled by a 192 MW CT. This indicates that IPL expects to have a peaking need, as opposed to an intermediate or baseload need, which makes sense given the amount of wind that will be coming online in the near-term. With regard to the two 50 MW solar units in 2022-2023, as noted, these were modeling outcomes that lowered the PVRR but were not selected to meet a capacity need.

### B. CO<sub>2</sub> Emissions

As shown in Table 4.7.1 below, IPL projects a steady decline in its annual CO<sub>2</sub> output (in tons) and its CO<sub>2</sub> ton/MWh rate (carbon intensity) over the study period. This is largely attributable to continued investments in wind, several unit retirements, and fuel-switching at existing facilities. (Note that the projected 2026 step-change is a result of the modeling assumption that the nuclear DAEC PPA will expire in 2025 and not be renewed.)

Table 4.7.1 – “b” Series, No Carbon Reference Case, CO<sub>2</sub> Emissions and Rate

Year	CO <sub>2</sub> Emissions, Tons	GWH Energy	Tons/MWh
2017	11,690,678	17,081	0.68
2018	11,145,990	16,858	0.66
2019	9,570,406	16,788	0.57
2020	6,449,203	16,925	0.38
2021	6,038,329	17,031	0.35
2022	5,757,828	17,145	0.34
2023	5,801,870	17,214	0.34
2024	6,335,767	17,335	0.37
2025	6,469,766	17,459	0.37
2026	8,376,436	17,585	0.48
2027	8,647,323	17,676	0.49
2028	8,753,688	17,768	0.49
2029	8,820,495	17,860	0.49
2030	8,811,892	17,953	0.49
2031	8,851,171	18,046	0.49
2032	8,916,312	18,139	0.49
2033	8,936,163	18,233	0.49

Section 5 of IPL’s petition provides a comprehensive discussion of all federal environmental regulation that may impact IPL’s operations. The Company noted, “IPL’s environmental obligations in Minnesota during the 2017 IRP planning period are forecasted to be minimal due to IPL’s limited fossil-fuel fired electric generation in Minnesota. IPL retired its sole fossil-fuel fired unit in Minnesota – Fox Lake Unit 3 – as of November 2017.”<sup>35</sup>

### C. Renewable Energy Obligations

As discussed in the “Introduction” section of these briefing papers, because IPL has sold its Minnesota retail electric service assets to SMEC, IPL is no longer subject to the Minnesota RES. Nevertheless, IPL included several figures showing its renewable energy status in Section 5 of its petition.

Notably, pursuant to Iowa’s renewable portfolio standard (RPS), the Alternative Energy Production (AEP) law,<sup>36</sup> IPL must secure 49.8 MW of nameplate renewable capacity. This equates to approximately 125,000 MWh per year, or 0.8% of Iowa annual retail energy sales.

As shown in the tables on pages 5 and 6 of Appendix 5A of IPL’s petition (which staff did not include in these briefing papers), IPL has far exceeded this mandate, as IPL projects that, over the next ten years, it will have a renewable energy credit (REC) surplus of approximately 1.5 - 5.5 million RECs per year relative to Iowa’s current renewable energy requirements.<sup>37</sup>

<sup>35</sup> Resource Plan, Section 5, Page 5-3.

<sup>36</sup> Iowa Administrative Code 199-15.11(1).

<sup>37</sup> Resource Plan, Section 5 (Action Plan), at 5-3.

## V. Party Comments

The Department of Commerce (Department) was the only party to intervene in this case. The Department's analysis is on page 5 of its May 24, 2018 comments; in short, the Department discussed the fact that IPL is no longer a public utility in Minnesota and thus not obligated to Minnesota policy requirements; in addition, the Department concluded that IPL has adequate resources to reliably provide wholesale power to SMEC:

### II. DEPARTMENT ANALYSIS

#### A. REQUIREMENTS FOR 2017 IRP

When IPL closed on the sale of its Minnesota retail electric distribution assets in 2015, IPL ceased being a public utility as defined in Minn. Stat. S 216B.02, Subd. 4 and became a wholesale power provider to SMEC. The Minnesota Renewable Energy Standard (RES)<sup>38</sup> and the Solar Energy Standard (SES)<sup>39</sup> apply to public utilities.<sup>40</sup> Also, Since IPL is no longer a Minnesota public utility, the Company is not subject to Minnesota's RES and SES. The Conservation Improvement Program (CIP) applies to public utilities,<sup>41</sup> cooperative electric associations, and municipalities.<sup>42</sup> However, IPL is no longer a Minnesota public utility and also has no retail customers in Minnesota, and thus does not offer CIP programs in Minnesota. Under Minn. Stat. § 216B.2422 Subd. 2(b), the Commission's order on IPL's 2017 IRP will be advisory. Commission Staff made this observation on page 44 of its Briefing Papers filed in Docket No. E-001/PA-07- 540 on April 30, 2015.<sup>43</sup> Given IPL's role essentially as a wholesale supplier to SMEC, the Department concludes that the primary concern in this docket is to assess whether IPL has sufficient resources to ensure a reliable operating system while serving SMEC. This issue is discussed briefly below.

#### B. IPL'S ABILITY TO PROVIDE SUFFICIENT CAPACITY

As shown in Table 1 above, even without additions to its existing and committed resources, IPL has sufficient resources through the current contract that IPL has to supply SMEC. With resources identified through its planning process, IPL has sufficient resources through its Minnesota IRP planning period to cover SMEC's needs. Consequently, the Department concludes that IPL is able to provide SMEC with its resource needs in a reliable manner.

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<sup>38</sup> Minnesota Statutes 216B.1691, subd. 2a.

<sup>39</sup> Minnesota Statutes 216B.1691, subd. 2f.

<sup>40</sup> Minnesota Statutes 216B.1691, subd. 1 (b).

<sup>41</sup> Minnesota Statutes 216B.241, subd. 1a.

<sup>42</sup> Minn. Stat. 216B.241, subd. 1b.

<sup>43</sup> The Department appreciates the meetings that IPL organized to discuss the requirements for its instant resource plan.



## VI. Staff Discussion

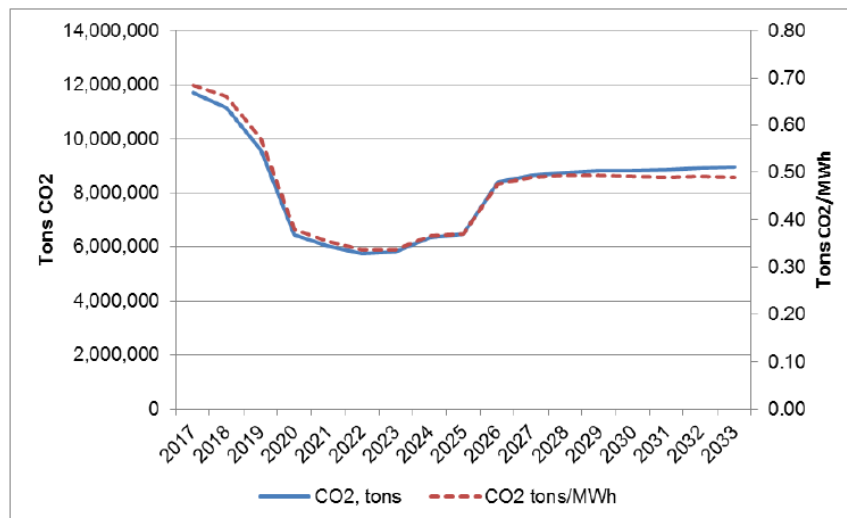
### A. IRP Evaluation

In staff's view, IPL's 2017 IRP is complete, reasonable, and actually fairly consistent with other Minnesota investor-owned utilities' IRPs. For example, as shown below in Table 4.6.1 of IPL's petition, IPL's energy production from wind increases from 12% in 2017 to approximately 40% by the early 2020s, similar to many Minnesota utilities that have exceeded the RES:

**Table 4.6.1 – "a" Series Reference Case, Annual Energy Production by Fuel Type**

Year	Coal	Nuclear	Gas	Market	Solar	Wind
2017	41%	20%	6%	21%	0%	12%
2018	40%	20%	9%	19%	0%	12%
2019	35%	20%	7%	16%	0%	21%
2020	26%	20%	13%	3%	0%	38%
2021	24%	19%	12%	3%	0%	41%
2022	21%	19%	14%	4%	1%	41%
2023	21%	19%	13%	4%	1%	41%
2024	24%	19%	10%	5%	1%	40%
2025	24%	19%	10%	5%	1%	40%
2026	30%	0%	23%	5%	1%	40%
2027	30%	0%	25%	5%	1%	38%
2028	30%	0%	25%	6%	2%	37%
2029	29%	0%	26%	6%	3%	36%
2030	29%	0%	26%	6%	3%	36%
2031	28%	0%	26%	6%	4%	36%
2032	28%	0%	26%	6%	4%	36%
2033	28%	0%	26%	6%	4%	36%

Moreover, as shown below in Figure 6.0.2.1, IPL's near-term CO<sub>2</sub> emissions are cut in half in the near-term as a result of wind additions as well as several unit retirements.<sup>44</sup> This is similar to many Minnesota utilities who are on track to meet Minnesota's near-term greenhouse gas goals:



**Figure 6.0.2.1 – No Carbon Case, CO<sub>2</sub> Emissions and Rate**

<sup>44</sup> Staff notes that, as discussed previously, the step increase is due to the expiration of the Duane Arnold PPA, which will now occur five years earlier.

Additionally, as shown in the Updated Load and Capability table from IPL's August 2018 NoCC (which staff has excerpted and replicated below), IPL should be able to comfortably cover its resource obligation over the next five years, even without DAEC:

Year	2019	2020	2021	2022	2023
IPL Position (Long/short)	420.1	521.7	108.1	79.1	63.1

Thus, as the Company demonstrated, IPL's action plan of (1) retiring older fossil fuel generators, (2) incorporating more efficient natural gas units, and (3) adding substantial amounts of wind energy is quite familiar to recent IRPs before the Commission. One notable exception, however, is energy efficiency: IPL noted in its reply comments that it has proposed in its five-year energy efficiency plan annual energy savings targets ranging from 0.73% to 0.82% of retail sales, which is obviously well-below Minnesota's 1.5% annual energy savings goal.

However, in Iowa, IPL is required to submit five-year energy efficiency plans, which have their own statutory guidance, budgets, and measures of compliance. In other words, IPL's energy efficiency programs and budgets are under the IUB's authority. Additionally, as the Department explained, the Conservation Improvement Program applies to public utilities, and IPL is no longer a Minnesota public utility. Therefore, staff does not believe IPL should be advised to achieve greater annual energy savings.

For the reasons discussed in this section, staff agrees with the Department that IPL's resource plan should be accepted, and staff does not believe there are any substantive issues the Commission needs to address.

### *B. Future Filings*

In IPL's reply comments, the Company requested the Commission delegate authority to the Executive Secretary to delay IPL's next IRP filing, if agreed to by IPL and the Department:

The Department concludes in its Comments that the primary concern of this IRP docket is to assess whether IPL has sufficient resources to ensure a reliable operating system while serving SMEC. (Dep't Comment at 5.) With this conclusion and in an effort to streamline regulatory activity for all involved parties, IPL believes it prudent to provide the Executive Secretary the authority to delay IPL's next IRP filing if agreed to by the Department and IPL. Such authority would be comparable to the Commission's July 7, 2017 Order, which granted an extension for IPL's instant IRP filing and delegated authority to the Executive Secretary to further delay IPL's IRP if agreed to by the parties.<sup>45</sup>

The Commission has a few options depending on its interpretation of the IRP Rules and Statute: (1) it could, as requested by the Company, give authority to the Executive Secretary to possibly delay the next IRP filing; (2) the Commission could set a deadline for IPL's next IRP beyond the

<sup>45</sup> IPL reply comments, at 4.

every-other-year filing date stated in the Rule; (3) the Commission could set a filing date of 2026, in which case IPL would only have to file an IRP if its contract with SMEC is renewed; or (4) the Commission could determine that IPL is no longer obligated to file a resource plan.

Notably, the IRP Statute is not where the deadlines for or regularity of IRP filings originates; rather, it is the Commission's Rules which requires that "every two years ... an electric utility shall submit a proposed resource plan covering the forecast period."<sup>46</sup> The IRP Statute requires that "[a] utility shall file a resource plan with the commission periodically **in accordance with rules adopted by the commission**,"<sup>47</sup> and the Commission's rules can (and frequently are) varied. (Emphasis added.)

At a minimum, staff believes the Commission can vary its rules to allow more time for IPL to submit its next plan, should it be required to submit one under the IRP Statute. One factor to consider in setting the next deadline is that IPL's wholesale power agreement with SMEC has a minimum term of ten years.<sup>48</sup> If the agreement is not renewed, the term would presumably conclude in mid-2025 since the agreement commenced in July 2015, and IPL will then have no direct or indirect relationship with Minnesota retail electric service customers. Setting a new deadline of 2026 would mean that IPL would not need to file an IRP that year if its current power contract with SMEC is not renewed. (At this time, there is no indication of whether the contract will or will not be renewed.)

An additional consideration is the Commission's authority over IPL's resource planning. Given that the Commission's role is advisory, and that all resource decisions, including energy efficiency and renewable energy obligations, are under the authority of the IUB, it is not clear what advice the Commission could give IPL that it would ultimately act on.

Generally speaking, the three primary objectives of resource planning are to (1) ensure reliability; (2) keep electric rates as low as practicable; and (3) examine environmental impacts, including the effects of adhering to Minnesota's environmental policy goals and requirements. In this case, IPL has demonstrated it will be able to satisfy its resource obligation over the next five years. With regard to rates, neither IPL nor SMEC is rate-regulated by the Commission. Additionally, IPL is not subject to Minnesota's state energy policy. (Even if it were, IPL's long-term plan largely follows the same trajectory of more renewables and less carbon as other IOUs operating in Minnesota.) Thus, there is questionable value in requiring a new IRP when IPL's rates and resource decisions are under the IUB's authority.

As discussed in the "Introduction" section of these briefing papers, in the SMEC docket, parties coalesced around the expectation that, in part for practical purposes, IPL would continue to file IRPs. But it was not an established fact at the time that the IRP Statute requires IPL to file a resource plan—IPL basically volunteered to do it. Thus, perhaps, the Commission could find

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<sup>46</sup> Minn. R. 7843.0300, subp. 2.

<sup>47</sup> Minn. Stat. 216B.2422, subd. 2(a).

<sup>48</sup> SMEC must give IPL a 5-year notice of termination, which cannot be given until five years after the effective date of the agreement.

that IPL is not obligated to file another IRP. This said, IPL acknowledges (and staff agrees) that IPL clearly falls under the definition of a “utility” under the IRP Statute, as it indirectly provides power to about 42,000 retail customers in Minnesota. Furthermore, presumably either IPL or SMEC would have to file an IRP for the retail customers receiving that power; staff believes it would be an overly complicated, unnecessary, and potentially problematic outcome if the Commission were to decide in this case that now SMEC must assume IPL’s responsibility to file IRPs. Therefore, while there are legitimate questions of value and efficiency of resources that exist, the most pragmatic approach could be avoiding the weeds of various legal interpretations of the IRP Statute and deciding that IPL will continue to file IRPs, but with a granted extension.

Part of the reason staff introduces the issue of not requiring further IRP filings is because resource plans are fairly robust filings. Staff is sympathetic to the work IPL must put into its IRP even though its presence in Minnesota is very limited. For example, IPL’s modeling in this case was extensive, and while it may not have been overly problematic to run the model for this IRP (since IPL probably had the EGEAS database developed due to its resource acquisition filings in Iowa), this may not be the case when IPL’s next IRP would be due. Resource plan filings also require utilities to compile lengthy explanations of all of the resource planning and acquisition issues it is considering over the plan’s long-term time horizon. The comprehensiveness of IRP filings is partially what makes them so valuable to the Commission, but the value only comes through in instances where the Commission can make modifications or have a meaningful advisory role.

Overall, staff believes there might be limited value in requiring IPL to submit further plans, but at the same time, staff believes the Commission’s decision should rely on its interpretation of the IRP Statute and the Commission’s IRP Rules.

If the Commission determines that a future resource plan filing is required by statute, the Commission may want to discuss with IPL and the Department what that filing should include. From staff’s perspective, it would be satisfactory to have another updated load and capability table accompanied by a “nontechnical summary,” which is the not-exceeding-25-pages-in-length overview required by Minn. R. 7843.0400, subpart 4.<sup>49</sup> Again, however, there are contents of a resource plan required by the IRP Statute, so what is paramount is the Commission’s determination of which requirements of Minn. Stat. § 216B.2422 apply to IPL now that its only business in Minnesota is the sale of wholesale energy to SMEC.

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<sup>49</sup> Minn. R. 7843.0400, Subp. 4 requires: “A utility shall include in its resource plan filing a nontechnical summary, not exceeding 25 pages in length and describing the utility’s resource needs, the resource plan created by the utility to meet those needs, the process and analytical techniques used to create the plan, activities required over the next five years to implement the plan, and the likely effect of plan implementation on electric rates and bills.”

## VII. Decision Options

1. Accept Interstate Power and Light's 2017-2037 Integrated Resource Plan. (*IPL, Department, Staff*)
2. Deny IPL's resource plan.
3. Require IPL to file its next resource plan by February 1, 2021;
4. Require IPL to file its next resource plan by February 1, 2026, if IPL renews its agreement under which IPL sells electric power to Southern Minnesota Energy Cooperative;
5. Delegate authority to the Executive Secretary to delay the next IRP filing if agreed upon by the Department and IPL;
6. Determine that IPL is no longer obligated to file a resource plan.

