

ILLINOIS COMMERCE COMMISSION

Report to the General Assembly in Compliance with Section 1-75(d-5) of the Illinois Power Agency Act 20 ILCS 3855/1-75(d-5)(F)(2)



August 2019

STATE OF ILLINOIS



ILLINOIS COMMERCE COMMISSION

August 21, 2019

The Honorable Members of the Illinois General Assembly

Please find enclosed the ICC's report in compliance with Section 1-75(d-5)(F)(2) of the Illinois Power Agency Act [20 ILCS 3855/1-75(d-5)(F)(2)]. Section 1-75(d-5) requires the ICC to review the limitation on the amount of zero emission credits procured and report to the General Assembly its findings as to whether that limitation unduly constrains the procurement of cost-effective zero emission credits.

Sincerely,

A handwritten signature in blue ink, appearing to read "CKZ".

Carrie K. Zalewski
Chairman
Illinois Commerce Commission

Purpose of the Report:

Section 1-75(d-5) of the IPA Act requires the Illinois Commerce Commission (“ICC”) to “review the limitation on the amount of zero emission credits procured under this subsection (d-5) and report to the General Assembly its findings as to whether that limitation unduly constrains the procurement of cost-effective zero emission credits.” 20 ILCS 3855/1-75(d-5)(F)(2).

Background:

Unlike coal or natural gas-fired power plants, nuclear power plants generate electricity without the air pollutant emissions that result from the combustion of fossil fuels. In most states—including Illinois—these nuclear power generating facilities are not considered to be “renewable” resources (Definition of Renewable Energy Resources, 20 ILCS 3855/1-10.) and therefore are not eligible to produce renewable energy credits, or RECs. As a consequence, they cannot be used to meet state renewable energy resource procurement targets, such as the Illinois Renewable Portfolio Standard, leaving them without a mechanism to receive value for the zero emission attributes associated with their generation.

The discussions surrounding the continued economic feasibility of certain Illinois nuclear power plants began to intensify in 2014 when the Illinois House of Representatives adopted a resolution that stated that “some Illinois nuclear power plants, like others around the country, are at risk of premature shutdown due to a variety of electric transmission and economic factors as well as the failure of competitive wholesale markets and energy policy to recognize nuclear power for its reliability and clean energy attributes.” House Resolution 1146 (“HR 1146”) further stated that “it is of the highest importance that the State of Illinois preserve its existing clean energy resources as a means of complying with federal laws, keeping electricity costs stable and affordable, ensuring grid reliability, and continuing its national leadership in the generation of reliable and clean energy.”

HR 1146 also urged the ICC to prepare a report examining “the impact on residential, commercial, and industrial electric rates from the premature closure of Illinois’ nuclear power plants.” Likewise, the resolution urged the Illinois Power Agency (“IPA”), the Illinois Environmental Protection Agency, and the Department of Commerce and Economic Opportunity to study the impact on regional reliability, the environment, and the economy, respectively. Those reports were published in January 2015 and they concluded with a range of several potential “market-based solutions that will ensure that the premature closure of these nuclear power plants does not occur.” One of the potential solutions discussed in the reports was the creation of a separate Low Carbon Portfolio Standard for Illinois, focusing on low or no carbon emission energy sources, such as nuclear energy, that are not already included in the existing Renewable Portfolio Standard.

Less than two years later, in December 2016, Public Act 99-0906 was passed by the Illinois General Assembly and signed into law by the Governor. Public Act 99-0906, which became effective on June 1, 2017, created a new Zero Emission Standard for Illinois. The legislation declared that “[r]educing emissions of carbon dioxide and other air pollutants, such as sulfur oxides, nitrogen oxides, and particulate matter, is critical to improving air quality in Illinois for Illinois residents,” and that, as a result, “... Illinois must expand its commitment to zero emission generation and value the environmental attributes of zero emission generation that currently falls outside the scope of the existing renewable portfolio standard, including, but not limited to, nuclear power.”

The legislature found that “[p]reserving existing zero emission energy generation and promoting new zero emission energy generation is vital to placing the State on a glide path to achieving its environmental goals and ensuring that air quality in Illinois continues to improve.” To best achieve these goals, the General Assembly found that “it is necessary to establish and implement a zero emission standard, which will increase the State’s reliance on zero emission energy through the procurement of zero emission credits from zero emission facilities, in order to achieve the State’s environmental objectives and reduce the adverse impact of emitted air pollutants on the health and welfare of the State’s citizens.” A zero emission credit (“ZEC”) is defined as “a tradable credit that represents the environmental attributes of one megawatt hour (“MWh”) of energy produced from a zero emission facility.” A zero emission facility is defined as a generating facility “fueled by nuclear power” interconnected to PJM or MISO. The contracts for ZEC delivery must have a term of 10 years, ending May 31, 2027, which in turn requires the winning nuclear power plant to continue operations through that time period. Public Act 99-0906 required the IPA to develop, and file for ICC approval, a Zero Emission Standard Plan setting forth a plan for ensuring compliance with the new standard.

The IPA was required to publish a draft Zero Emission Standard Procurement Plan within 45 days of the effective date of the Act (June 1, 2017) and interested parties were allowed 10 days to provide comments on the draft Plan. Ameren Illinois Company (“Ameren Illinois”), Exelon Generation, the Illinois Industrial Energy Consumers, Invenergy LLC, and the ICC Staff provided comments on the draft plan. On July 31, 2017, the IPA filed a revised plan with the ICC. The Act provided the Commission with 45 days to review the filed Plan and if the Commission determines that the Plan would result in the cost effective procurement of ZECs, “then the Commission shall . . . approve the plan or approve with modification.” At its September 11, 2017 Special Open Meeting, the Commission approved the Zero Emission Standard Procurement Plan, subject to certain modifications, in Docket No. 17-0333. In addition, after the Procurement Plan was approved with modification by the Commission, the IPA requested that potential bidders with facilities meeting the definition of a zero emission facility submit the prescribed eligibility information within 14 days.

Quantity and Price of Zero Emission Credits:

Beginning with the 2017/2018 delivery year, the IPA shall, for electric utilities that serve at least 100,000 retail customers in Illinois (Commonwealth Edison Company (“ComEd”) and Ameren Illinois), procure ZECs in an amount approximately equal to 16% of the actual amount of electricity delivered by each electric utility to retail customers in the State during calendar year 2014. For an electric utility serving fewer than 100,000 retail customers in Illinois that requested the IPA to procure power and energy for all or a portion of the utility’s Illinois load for the delivery year commencing June 1, 2016 (MidAmerican Energy Company or “MidAmerican”), the IPA shall procure ZECs in an amount approximately equal to 16% of the portion of power and energy to be procured by the Agency for the utility. The quantity of zero emission credits to be procured under the contracts shall be all of the zero emission credits generated by the zero emission facility in each delivery year; however, if the zero emission facility is owned by more than one entity, then the quantity of zero emission credits to be procured under the contracts shall be the amount of zero emission credits that are generated from the portion of the zero emission facility that is owned by the winning supplier. The overall annual target quantity of ZECs of 20,118,672 ZECs was determined on the basis of the amount equal to approximately 16% of the actual amount of electricity delivered by Ameren and ComEd during the calendar year 2014 and an amount equal to approximately 16% of the portion of power and energy procured by the IPA for MEC.

Unlike the procurement for RECs from utility-scale renewable resources, the price per ZEC is set by the law. Section 1-75(d-5)(1)(B) of the IPA Act specifies that the price for each ZEC procured for a given delivery year equals the Social Cost of Carbon, expressed on a dollar per MWh basis, starting at \$16.50 per MWh. The Act specifies that the initial \$16.50 per MWh is based on the U.S. Interagency Working Group on Social Cost of Greenhouse Gases and the Act further provides that the Social Cost of Carbon price be increased by \$1 per MWh starting in 2023. However, the law also aims to “ensure that the procurement of zero emission credits remains affordable for retail customers,” and thus, the price per ZEC has the potential to be reduced in future delivery years “if energy and capacity prices are projected to rise above 2016 levels.” 20 ILCS 3855/1-75(d-5)(1)(A).

That price is then subject to a “market price adjustment,” which provides that the ZEC price be reduced to below the Social Cost of Carbon if a set of price indices of electric energy and capacity increases. This potential reduction is determined by the amount by which the set of energy and capacity price indices for the applicable delivery year exceeds a so-called 2015/2016 “Baseline Market Price Index” of \$31.40 per MWh.

Selection of Zero Emission Facilities:

The law further states that the winning bids must be selected based on public interest criteria. Those criteria include, but are not limited to, minimizing carbon dioxide emissions that result from electricity consumed in Illinois and minimizing sulfur dioxide, nitrogen oxide, and particulate matter emissions that adversely affect the citizens of this State. In particular, the selection of winning bids must take into account the incremental environmental benefits resulting from the procurement, such as any existing environmental benefits that are preserved by the ZEC procurements and that would cease to exist if the procurements were not held, including the preservation of zero emission facilities. The IPA’s Commission-approved Zero Emission Standard Procurement Plan set out detailed evaluation criteria designed to assess the ability of zero emission facilities to meet the public interest requirements identified in the Act.

On January 10, 2018, the IPA’s procurement administrator, NERA Economic Consulting, held a procurement event for the sale of zero emission credits to Ameren Illinois, ComEd, and MidAmerican. The procurement process was monitored for the Commission by Bates White. On January 25, 2018, voting in open session, the Commission approved the procurement administrator’s selection of winning zero emission facilities.

In order to evaluate the impact of zero emission facilities on the amount of carbon dioxide emissions resulting from electricity consumed in Illinois, facility reviews examined the fraction of the zero emission facility’s replacement generation expected to be consumed in Illinois and the expected carbon content of that replacement generation consumed in Illinois. Using proxy information, the IPA assumed 33% of replacement generation for a zero emission facility would come from the state in which it is located and 67% would be produced in other states on a generation-weighted (coal and gas-fired generation) basis within the same regional transmission organization as the zero emission facility. Using additional proxy information, the IPA assumed 7.79% of replacement generation produced outside of Illinois, but in MISO, would be consumed in Illinois and that 22.2% of replacement generation produced outside of Illinois, but in PJM, would be consumed in Illinois. The IPA further assessed the impact of replacement generation from each state by comparing the states’ output of CO₂ per megawatt hour with the comparable regional figures. To evaluate the impact of zero emission facilities on the amount of non-

carbon dioxide emissions impacting Illinois citizens, facility reviews examined the degree to which emissions from a zero emission facility's replacement generation would increase the amount of sulfur dioxide ("SO₂"), nitrogen oxide ("NO_x") and particulate matters ("PM") in Illinois and thus have adverse impacts on Illinois citizens. Again, the IPA assumed 33% of replacement generation for a zero emission facility would come from the state in which it is located and 67% would be produced in other states on a generation-weighted (coal and gas-fired generation) basis within the same regional transmission organization as the zero emission facility. The IPA then estimated how much of the air pollution from this replacement generation would reach Illinois by examining the facilities' distance from Illinois and the average amount of time the wind blows from the location into Illinois. The IPA assessed the impact of replacement generation from each state by comparing that state's output of SO₂, NO_x, and PM per megawatt hour with the comparable regional figures. Each facility could receive a maximum score of 25 points for each of the CO₂, SO₂, NO_x, and PM criteria and a maximum overall score from these environmental criteria of 100 points. To get final scores, the emission scores for each facility were multiplied by an Economic Stress Multiplier ("ESM"). The Economic Stress Multiplier estimates the degree to which each facility is at risk of closure due to economic and market conditions. The ESM was calculated as the ratio of a zero emission facility's operating cost per megawatt hour divided by an estimate of the market revenues such a facility might expect to receive (\$31.40 per megawatt hour adjusted for locational pricing differences). The successful bidders in the ZEC RFP were those facilities that achieved the highest scores as determined through the evaluation process. The winning bidders were Quad Cities Nuclear Power Station Unit 1, Quad Cities Nuclear Power Station Unit 2, and Clinton Nuclear Power Station, Unit 1.

Value of Avoided Greenhouse Gas Emissions and the Estimated Costs of Replacement:

Public Act 99-0906 required the calculation of the value of avoided greenhouse gas emissions as a result of the preservation of the zero emission generation. It is calculated as the sum of the product of the Social Cost of Carbon (as specified in Public Act 99-0906) for each delivery year, multiplied by the projected annual output, summed across the contract term. This cumulative value over the expected life of the ZEC contracts, without any adjustments, is \$3,583,277,212.

The law also required the calculation of the costs of replacement with other zero carbon dioxide resources, including wind and photovoltaic, based upon the simple average of the following: a. the price, or if there is more than one price, the average of the prices, paid for renewable energy credits from new utility-scale wind projects in the procurement events specified in item (i) of subparagraph (G) of paragraph (1) of subsection (c) of Section 1-75 of the Act; b. the price, or if there is more than one price, the average of the prices, paid for renewable energy credits from new utility-scale solar projects and brownfield site photovoltaic projects in the procurement events specified in item (ii) of subparagraph (G) of paragraph (1) of subsection (c) of Section 1-75 of the Act and, after January 1, 2015, renewable energy credits from photovoltaic distributed generation projects in procurement events held under subsection (c) of Section 1-75 of the Act.

The cost of replacement with other zero carbon dioxide resources, including wind and photovoltaic, is estimated as the simple average of the REC prices paid for new utility-scale wind projects (procured through the Initial Forward Procurement) and the REC prices paid for solar projects (including new utility-scale solar projects procured through the Initial Forward Procurement and photovoltaic distributed generation projects procured after January 1, 2015) multiplied by the projected annual output

over the life of the contract. The cost of replacement can be estimated two different ways. The first approach uses the simple average of (1) the winning bid prices for Wind RECs; and (2) the average of the winning bid prices for RECs from the photovoltaic projects described above, weighted by the annual quantity of RECs procured from the photovoltaic projects. This approach yields a value of \$13.14 per REC and an estimated cost of replacement of \$2,689,634,019. The second approach uses the simple average of (1) the winning bid prices for Wind RECs; and (2) the simple average of the average winning bid prices for RECs from the photovoltaic projects described above. This approach yields a value of \$50.05 per REC and an estimated cost of replacement of \$10,243,987,739.

Zero Emission Cost Impact Cap:

The Zero Emission Standard also sets an annual rate impact cap on the amount that can be paid through customer surcharges for the purchase of ZECs. This cost cap limits the cost of ZECs to retail customers to no more than 1.65% of the amount paid per kWh by eligible retail customers during the year ending May 31, 2009. The rate impact cap provides the basis for creating a ZEC procurement budget through applying the “resulting per kilowatthour amount” to “the actual amount of kilowatthours of electricity delivered by the electric utility in the delivery year immediately prior to the procurement, producing the overall total amount that may be spent on ZEC purchases for a given delivery year (i.e., the ZEC procurement budget).

This ZEC procurement budget therefor has the potential to constrain the ability to meet the intended procurement quantities. However, Public Act 99-0906 directly addresses this possibility when it states that “[u]npaid contractual volume for any delivery year shall be paid in any subsequent delivery year in which such payments can be made without exceeding” the rate impact cap. Produced ZECs that are above the quantity allowed under the procurement budget are still to be delivered but are considered eligible only for a future delivery year’s payment.

Additional ZECs generated by the facility in excess of this requirement, if any, would be banked for use in meeting future years’ delivery targets (if necessary). These banked ZECs are different from unpaid contractual volume in that banked ZECs are zero emission credits produced in excess of a given delivery year’s ZEC delivery and procurement targets.

Pursuant to the law’s rate impact cap, the amount to be spent on ZECs for a given delivery year must “be reduced for all retail customers based on the amount necessary to limit the net increase that delivery year to the costs of those credits included in the amounts paid by eligible retail customers in connection with electric service to no more than 1.65% of the amount paid per kilowatthour by eligible retail customers during the year ending May 31, 2009.” In order to calculate the maximum dollar amount of zero emission credits to be paid for a particular delivery year, the law provides that the “resulting per kilowatthour amount shall be applied to the actual amount of kilowatthours of electricity delivered by the electric utility in the delivery year immediately prior to the procurement, to all retail customers in its service territory.” For the initial delivery year, the 2017-2018 delivery year, the calculation is based on the following formula:

$(1.65\% * 2008-2009 \text{ Rate for Eligible Retail Customers}) * 2016-2017 \text{ kWh to all retail customers}$

Applying this calculation to the three utilities for the **2017-2018 delivery year** yields the following:

- Ameren Illinois: $(1.65\% * 10.77 \text{ cents/kWh}) * 35,886,827 \text{ MWh} = \$63,748,017$
- ComEd: $(1.65\% * 11.82 \text{ cents/kWh}) * 88,075,281 \text{ MWh} = \$171,817,027$
- MidAmerican: $(1.65\% * 6.18 \text{ cents/kWh}) * 263,664 \text{ MWh} = \$268,705$

These ZEC cost caps are then further reduced by the costs incurred by the utilities to retire the ZECs as well as any other administrative costs associated with the purchase of ZECs. Adjusting for those costs, the cost caps for the three utilities are as follows: Ameren Illinois: \$63,399,854; ComEd: \$171,201,433; MidAmerican: \$249,627.

At a price of \$16.50 per ZEC, these cost caps thus limit the ZECs that the utilities can purchase for the 2017-2018 delivery year to the following quantities:

- Ameren Illinois: 3,842,415
- ComEd: 10,375,844
- MidAmerican: 15,128.

Applying these ZEC volume caps to the annual target ZEC quantities, results in the following unpaid contractual volumes for the 2017-2018 delivery year:

- Ameren Illinois: 2,061,168
- ComEd: 3,797,059
- MidAmerican: 27,058.

Performing this calculation for the second year, the **2018-2019 delivery year**, taking into account the ZEC retirement costs and other administrative costs, yields the following:

- Ameren Illinois: $(1.65\% * 10.77 \text{ cents/kWh}) * 35,460,349 \text{ MWh} = \$62,768,010$
- ComEd: $(1.65\% * 11.82 \text{ cents/kWh}) * 88,095,974 \text{ MWh} = \$171,278,801$
- MidAmerican: $(1.65\% * 6.18 \text{ cents/kWh}) * 267,373 \text{ MWh} = \$276,763$

As described above, the law provides that the ZEC price for the second and following years be reduced to below the Social Cost of Carbon if a set of price indices of electric energy and capacity exceeds a 2015/2016 Baseline Market Price Index of \$31.40 per MWh. However, the energy and capacity prices did not exceed the Baseline Market Price Index that would result in a change to the price paid per ZEC for the 2018-2019 or the 2019-2020 delivery year.

At a price of \$16.50 per ZEC, these cost caps thus limit the ZECs that the utilities can purchase for the 2018-2019 delivery year to the following quantities:

- Ameren Illinois: 3,804,121
- ComEd: 10,380,533
- MidAmerican: 16,773.

Applying these ZEC volume caps to the annual target ZEC quantities, results in the following unpaid contractual volumes for the 2018-2019 delivery year:

- Ameren Illinois: 2,099,462
- ComEd: 3,792,370
- MidAmerican: 25,413.

Performing this calculation for the third year, the **2019-2020 delivery year**, taking into account the ZEC retirement costs and other administrative costs, yields the following:

- Ameren Illinois: $(1.65\% * 10.77 \text{ cents/kWh}) * 36,810,006 \text{ MWh} = \$65,212,411$
- ComEd: $(1.65\% * 11.82 \text{ cents/kWh}) * 88,493,510 \text{ MWh} = \$172,333,314$
- MidAmerican: $(1.65\% * 6.18 \text{ cents/kWh}) * 271,935 \text{ MWh} = \$262,332$

At a price of \$16.50 per ZEC, these cost caps thus limit the ZECs that the utilities can purchase for the 2019-2020 delivery year to the following quantities:

- Ameren Illinois: 3,952,267
- ComEd: 10,444,443
- MidAmerican: 15,898.

Applying these ZEC volume caps to the annual target ZEC quantities, results in the following unpaid contractual volumes for the 2019-2020 delivery year:

- Ameren Illinois: 1,951,316
- ComEd: 3,728,460
- MidAmerican: 26,288.

Adding up these quantities results in the following total unpaid contractual ZEC volumes for the first three years after the January 2018 ZEC procurement event:

- Ameren Illinois: $2,061,168 + 2,099,462 + 1,951,316 = 6,111,946$
- ComEd: $3,797,059 + 3,792,370 + 3,728,460 = 11,317,889$
- MidAmerican: $27,058 + 25,413 + 26,288 = 78,759$

Recommendation:

Section 1-75(d-5) of the IPA Act requires the reduction of contractual ZEC procurement volumes in a delivery year if such a reduction is necessary to meet ZEC procurement cost impact limits specified within Section (d-5). As explained above, as a result of the rate impact caps, not all ZECs produced by the facilities receiving ZEC contracts have been paid for so far. While, pursuant to ZEC contracts, these facilities may be compensated for such ZECs in the future, such compensation is not assured. In fact, if the first three years of the contract implementation are any indication, the number of uncompensated ZECs produced by these plants may continue to increase over time.

However, while Quad Cities Nuclear Power Station Unit 1, Quad Cities Nuclear Power Station Unit 2, and Clinton Nuclear Power Station, Unit 1 may not be compensated for 100% of the ZECs they will supply pursuant to their ZEC contracts, these facilities are nevertheless expected to produce enough ZECs to

meet the overall annual target quantity of ZECs specified by Section 1-75(d-5) of the IPA Act. Thus, the IPA was able to successfully arrange for the procurement of ZECs from facilities that are expected to produce enough ZECs to meet the overall annual target quantity of ZECs specified by Section 1-75(d-5) of the IPA Act and the rate impact cap did not unduly constrain the procurement of cost-effective zero emission credits. Based upon the above, the Commission finds that the law's limitation on the amount of zero emission credits procured does not unduly constrain the procurement of cost-effective zero emission credits.