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March 2, 2011

Via Electronic Docket

Hon. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 1st St., NE
Washington, D. C. 20426

Re: Docket No. RM 10-11-000, **Comments on Proposed Rule on Integration of Variable Energy Resources**

Dear Ms. Bose:

Attached are Comments of the American Clean Skies Foundation (ACSF) in response to the above-identified Notice of Proposed Rulemaking (NOPR) on Integration of Variable Energy Resources. ACSF particularly supports Chairman Wellinghoff's vision encouraging Variable Energy Resources (VERs) to partner with natural gas as a means to a cleaner, healthier and more efficient electricity grid.

ACSF supports the Commission's proposals on the issues addressed by the NOPR. Cost-causation for ancillary services should underlie allocation decisions, based on the unique public benefits offered by individual VER projects. The service at issue in this NOPR amounts to a small portion of total costs, and Congress and states have already enacted tax and other programs to ease the capitalization and deployment of VERs.

As the NOPR is implemented, and in anticipation of creating new markets for ancillary services, we also urge the Commission to collect and publish relevant data on the cost and performance of these services.

Further, we urge the Commission in a subsequent NOPR to direct transmission operators in organized markets to reform scheduling practices in day-ahead markets and in unit commitment processes, while enhancing reliability by requiring all generators to provide cleaner reactive power. Such a NOPR also should direct RTOs to create added markets for more ancillary services: for instance, load following (on a minute-by-minute or hourly basis) and similar backup capabilities.

Sincerely,

A handwritten signature in blue ink that reads "Gregory C. Staple".

Gregory C. Staple
Chief Executive Officer
American Clean Skies Foundation

**UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION**

Integration of Variable Energy Resources) Docket No. RM10-11-000

COMMENTS OF THE AMERICAN CLEAN SKIES FOUNDATION

The American Clean Skies Foundation (ACSF) files these comments in accordance with the Notice of Proposed Rulemaking (NOPR) issued by the Federal Energy Regulatory Commission (Commission) in the above referenced docket. See *Integration of Variable Energy Resources*, 133 FERC ¶ 61,149 (2010) and the *Notice Extending Comment Period*, Docket No. RM10-11 (Dec. 16, 2010).

I. NOTICES and COMMUNICATIONS

Parties should direct communications concerning matters in this docket to:

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II. INTRODUCTION AND EXECUTIVE SUMMARY: THE VISION FOR A CLEAN ENERGY FUTURE

ACSF is a 501(c)(3) organization founded in 2007 to advance America’s energy independence and a cleaner, low-carbon environment through the expanded use of natural gas, renewables and energy efficiency.

Last December, Chairman Wellinghoff spelled out the potential for natural gas-fired generation and renewables (i.e., variable energy resources VERs) to create a large

new stable base load resource. Specifically, in remarks to the American Council on Renewable Energy, Chairman Wellinghoff said:¹

I see an opportunity . . . for the renewables industry and community to embrace the natural gas industry and work collaboratively and collectively as partners. . . . [Natural] gas can be such a good partner to renewables . . . because [gas plants] are flexible . . . extremely flexible. . . . They can be a synergistic partner with the variable energy resources we have in this country . . . wind and solar. . . . So, in marrying the two together we can ultimately create stable base load resources that can provide substantial amounts of our new energy needs. And our energy needs to replace aging coal plants that will be retired because of emissions requirements, and other requirements... FERC, of course is extremely interested in ensuring that markets can be efficient and effective... provid[ing] new products into those markets. And so, if we can look at the products of renewables coming in, and renewables in combination with gas, we are essentially fulfilling the mission of FERC.

ACSF supports this vision because not only does it meet the mission of the Commission but it will achieve cleaner air, reduce greenhouse gases and modernize our energy infrastructure.

Recent studies of renewable integration highlight the difficulty of adding variable energy resources (VERs) in energy markets dominated by coal and nuclear power.² Slower-ramping coal and nuclear steam plants reduce the flexibility of the generation fleet and increase the likelihood of having to curtail renewable power or risk operational problems, sharply increased emissions profiles, or costly shutdowns of baseload power. Replacing coal-fired generation with flexible gas-fired sources inherently enables VER generation, but doing so will require sending the right market signals to compensate flexible sources for all the benefits they provide.

¹ Remarks of Chairman Jon Wellinghoff before the American Council on Renewable Energy (December 9, 2010) appended as Attachment A.

² See e.g., *Integration of Renewable Resources: Operational Requirements and Generation Fleet Capability*, California Independent System Operator, 2010 <http://www.aiso.com/2804/2804d036401f0.pdf> See also *The Business Case for Integrating Clean Energy Resources to Replace Coal*, Joel N. Swisher, American Clean Skies Foundation (forthcoming April 2011).

In light of the above, ACSF urges FERC to use this docket to expand the scope of ancillary services mandated by RTOs to support VER integration in several respects. In particular, we think two more issues require immediate attention. First, the Commission should reform scheduling in the day-ahead market and in the unit commitment process. The same technology that makes 15-minute schedules feasible in the spot market makes reforms possible in these other areas. Especially in the unit commitment process, it is important to prevent the least clean and efficient generation from dominating dispatch at all hours. Second, the NOPR should require RTOs to offer additional ancillary services, such as load following (on a minute-to-minute or hourly basis), reactive power and other comparable backup capabilities.

III. COMMENTS

ACSF strongly supports the launching of this proceeding to integrate VERs into a smarter, cleaner and more flexible electricity grid, whose principal design features should enable much more widespread investment and deployment of integrated and hybrid VER generation systems. The grid should welcome more efficient and cleaner technologies that can achieve a far smaller emissions footprint, and accommodate cost recovery for these systems investments. To make this clean energy future a reality, it is critical that the Commission exercise its authority to develop policies that send adequate economic signals that permit the country's most flexible, clean generation sources to provide complementary power for VERs.

The Commission has already taken important steps to ensure the integration of VERs into the Nation's energy mix through past rulemakings and decisions.³ The NOPR represents the first stage of addressing the complex but critical set of remaining issues as set forth in the Commission's omnibus Notice of Inquiry. That notice raised seven issues: (1) power production forecasting; (2) scheduling procedures; (3) forward (day-ahead) market structure and reliability (must run) commitment processes; (4) coordination and consolidation of balancing authorities; (5) reserve products (backup power); (6) capacity market reforms; and (7) curtailment practices.

A. The Commission Should Expand the NOPR in Two Ways

While ACSF supports the NOPR as an initial step, we urge the Commission to do more. In order to make a clean energy future a reality, it is critical that the Commission exercise its authority to develop policies that send adequate economic signals to enable the utilization of our most flexible, clean generation sources as complementary power for VERs. The Commission made a good start with its determination to tackle more immediate issues regarding ancillary services and scheduling, while deferring complex questions, such as consolidating balancing authorities. However, the Commission should have pushed further in the first two areas.

If technology allows for real-time market scheduling in shorter increments, the same should hold true for day-ahead markets and reliability commitment processes. Therefore, the Commission should require the same reforms in scheduling procedure for forward markets and reliability commitment.

³ For example, FERC Order 890, *Preventing Undue Discrimination and Preference in Transmission Service*, February 16, 2007; Notice of Proposed Rulemaking, *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, September 29, 2010

We think it especially important for the Commission to reform reliability commitment. For reliability purposes, grid operators often use plants that otherwise would not meet economic dispatch. These facilities tend to be older and less efficient, and emit more pollutants. Easing entry for variable energy resources into reliability commitment would represent a major step toward improving public health. Reliability will also be enhanced if the Commission requires all generators, including VERs, to either provide reactive power on their own or procure reactive power from another source as a new ancillary service.

Similarly, the NOPR recognized the greater need variable energy resources have for ancillary services to dampen fluctuations in VER output. The Commission correctly required grid operators to offer generators regulation services, giving variable energy resources another source from which to obtain necessary backup power. The Commission should further require the development of following reserves (on a minute or hour basis).

There is a risk that as VER generation increases, it will displace older, less efficient and dirtier generation that would then be available for the ancillary service markets. This must be discouraged if we are to achieve Chairman Wellinghoff's vision. Accordingly, and to the extent the Commission's authority allows it, transmission providers should have to offer these new products in a way that gives priority to the cleanest, most flexible generation. To enable this, the Commission should develop cost recovery mechanisms that allow transmission providers to provide sufficient incentives to fully compensate these resources for the services they provide. This should apply to both new services and the regulation service the Commission is proposing in the NOPR. This

will send the appropriate economic signals to attract the investment necessary to expand the use flexible and clean back up generation.

B. Scheduling and Forecasting: Intra-hourly Scheduling and Central Weather Forecasting

The Commission proposed, and ACSF supports, requiring intrahour scheduling and generators providing meteorological data for forecasts including new systems to gather and manage these data. Shorter intervals, already feasible, will make the grid more efficient at little cost to operators. Better forecasts also improve the market, and generators can supply the information more cheaply. Together, these requirements will reduce the uncertainty surrounding VERs and substantially lower the costs of integrating them into the market.

C. Reserve Products: Requirement to Provide Generator Regulation and Frequency Response Service and the Recovery of Costs

The third element of the NOPR formalized the requirement that public utility transmission providers hold sufficient reserves necessary to respond to the moment-to-moment variations attributable to generation – whether the generation is serving the local load or exporting to another balancing area.⁴ The Commission’s proposal couples this requirement with a cost recovery mechanism: a new Schedule 10 under which generators must either accept and pay for the transmission provider’s regulation service or demonstrate that it is supplying the regulation service itself through self-supply or dynamic scheduling.⁵

⁴ NOPR at ¶ 68. This regulation and frequency response service is distinct from operating reserves (spinning, non-spinning and supplemental) that respond in the ten to thirty minute timeframe and which the Commission is not addressing at this time.

⁵ NOPR at ¶ 69-70.

Initially, all generators taking the service will pay according to the same formula under Schedule 10, regardless of their variability. However, once the transmission provider has adopted the new scheduling and weather forecasting requirements (which should decrease the overall need for reserves), it can require VERs to pay for a higher volume of reserves than conventional resources. To do this, the transmission provider must provide data showing that VERs impose a different impact on system variability.⁶

As the Commission noted, the requirement to secure regulation reserves is not entirely new – it is derivative of the transmission provider’s obligation to provide energy imbalance services.⁷ However, the manner in which the new charges will be applied to generators is new and will set an important precedent for the future should the Commission choose to expand ancillary service requirements to further integrate VERs. With this in mind, we support the Commission’s ultimate conclusion to allow the use of cost-causation principles to determine the allocation of reserve costs because this method is the most efficient and fair. At the same time, we accept the short-term reality that the system as a whole will need to shoulder these costs together until scheduling and forecasting reforms are adopted and sufficient data exists to accurately apportion the costs.

1. ACSF Concurrs with the Commission that Allocation Based on Cost-Causation is More Efficient and Fair

Chairman Wellinghoff predicated his vision on two assumptions: the combination of renewables and natural gas will (a) lead to added efficiency and (b) to new regulatory products in wholesale markets. But to recognize this vision, the costs of these new regulation services must be assigned to the generators responsible for the imbalance

⁶ NOPR at ¶ 74.

⁷ NOPR at ¶ 68.

services as well as the ratepayers in consuming areas. Cost should not be assigned solely to customers.

While ACSF understands the concerns of VERs regarding the foregoing approach, we support FERC's cost causation approach for two reasons.

First, the services involved here may be less than 3% of the total all-in wholesale service cost.⁸ Second, the executive and legislative branches at the federal and state levels have enacted tax credits and other fiscal programs designed to encourage variable energy.⁹ Given present economic and government budgetary constraints, this does not seem to be an appropriate time for the Commission to adopt a new agency-based subsidy for VERs.

Assigning the costs of generator regulation services to the VERs based on causation principles will require these sources to internalize the costs and make investment decisions based on a more accurate reflection of the true costs of deploying the technology. In contrast, socializing costs among all generators may unfairly place the burden on consumers served by the transmission operator when the energy is exported to another area, and in the absence of demonstrated system-wide benefits.

⁸ See Attachment B, which presents preliminary research data from MJ Bradley and Associates, a respected utility industry consulting group, indicating that total ancillary are a very small piece of total wholesale service costs.

⁹ This includes production tax credits (utilized by many wind facilities and in place through 2012), investment tax credits (utilized by many solar facilities and in place through 2016), and the Treasury's Sec. 1603 cash grant program (American Recovery and Reinvestment Act of 2009), in place through the end of this year. In addition, 29 states and the District of Columbia have mandatory "renewable portfolio standards" (RPS). http://www.dsireusa.org/documents/summarymaps/RPS_map.pptx Most of the programs utilize RECs as a compliance mechanism for the regulated utilities. Utilities must purchase the RECs from generators, which creates the financial incentive.

2. *Cost Causation is the Goal, but ACSF Understands that it May Not Be Appropriate in the Short Term*

We understand and agree with the wisdom behind FERC's two-step approach to assigning costs in the NOPR. While it is simple to understand at a high level that successful integration of VERs will require the procurement of additional capacity reserves, establishing the causation with sufficient clarity to charge differential costs is difficult. It will require time for transmission operators that do not already provide intra-hour scheduling, weather forecasting and robust ancillary services to put these programs in place and collect sufficient data to accurately apportion costs.

A preliminary survey of several balancing areas and RTOs shows that cost of regulation services vary widely.¹⁰ However, as it develops new rules on integrating VERs, we urge the Commission to gather more complete cost data. In particular, we suggest that relevant generators (and RTOs) be required to report relevant auxiliary service costs on a routine basis (quarterly or yearly) and that stakeholders be given an opportunity to participate in the evaluation of the data.

Respectfully submitted,



Gregory C. Staple
Chief Executive Officer
American Clean Skies Foundation

Dated: March 2, 2011

Outside Counsel:
Joshua Z. Rokach
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Silver Spring, MD 20902

¹⁰ See Attachment B.

ATTACHMENT A

**Excerpts From Remarks by
FERC Chairman Jon Wellinghoff
at ACORE Phase II Conference, Washington, D.C.
December 9, 2010¹**

Thank you very much, Roger [Ballantine]. I appreciate those very kind words. It's always a pleasure to be here at ACORE with Mike [Eckert] and his group. Mike often tells a story of me being at the first organizing meeting of ACORE [American Counsel on Renewable Energy]. I want to continue to participate with this wonderful organization. . . .

I'm just going to give you two points, and make it rather short. I think we need to recognize a couple things about renewable energy. I think renewable energy is truly going into a second stage. One of my fellow commissioners, Cheryl LaFleur, our newest commissioner from New England, said that renewable energy is in the big leagues now. And it really is in the big leagues now and we need to recognize that. And it's in the big leagues now largely because on the demand side, we've had thirty plus some states put in place renewable standards. So as such we've created markets for wind and solar and geothermal and biomass, and by creating those markets we really have moved renewable energy into the big leagues.

So the next question is . . . how do we get to that next point of being at cost parity, being the price taker in the market where ultimately renewables is the resource we go to. And I think there is an opportunity to do that, and I'll talk about that in respect to my first point.

Some people are concerned about the price of natural gas and how it may affect renewables. . . . Natural gas at \$4.50 [per mcf] and lots of natural gas that may continue out in the future at a fairly stable price could have an effect in one way or another.

Some people see it as a threat; I in fact see it as an opportunity -- an opportunity ultimately for the renewables industry and community to embrace the natural gas industry and to work collaboratively and collectively as partners. And I think in doing that we can, number one, collectively drive down the price of the combined resource, looking at natural gas as a partner.

And why natural gas can be such a good partner to renewables is because natural gas units are flexible. They are extremely flexible, unlike coal, unlike nuclear. And because of that, they can, in fact, be a synergistic partner with the variable renewable resources that we have in this country abundantly: Wind and solar. They are abundant, but they are variable. So in marrying

¹ NOTE: This is an unofficial transcript prepared by the American Clean Skies Foundation (ACSF). A webcast of Chairman Wellinghoff's full remarks can be found at <http://www.ustream.tv/channel/phase-ii-of-renewable-energy-in-america> [Wellinghoff's remarks should start about 1hour, 18 minutes in].

the two together, we can ultimately create stable baseload resources that can provide for substantial amounts of our new energy needs.

And our energy needs to replace aging coal plants that will be retired because of emissions requirements, and other requirements. So ultimately I think we need to look at this partnership, and we need to look at it very carefully.

FERC of course is extremely interested in ensuring that markets can be efficient and effective. And the one way markets can be efficient and effective is to provide new products into those markets. And so if we can look at the products of renewables coming in, and renewables in combination with gas, we are essentially fulfilling that mission of FERC, to ensure that rates are just and reasonable. By putting in place into the mix products that can both lower costs and optimize the lowering of emissions, and achieve our goals from a carbon standpoint as well.

So that is point number one that I'd like to make. And we are doing a number of things with respect to integrating renewables into the system. One is a NOPR, a Notice of Proposed Rule Making, that we just issued on variable energy resources. And in that we have a number of initiatives to help those resources better integrate into the system, and integrate in ways that they can become partners with a flexible resource like natural gas. So I would ask you all and urge you all to look at that NOPR and please provide comments on it, and see how we can make it better and put it into a final rule. . . ."

ATTACHMENT B



M. J. Bradley & Associates, LLC

47 Junction Square Drive
Concord, MA 01742
Tel: 978-369-5533
Fax: 978-369-7712

March 2, 2011

Mr. Gregory Staple
American Clean Skies Foundation
750 1st Street N.E., Suite 1100
Washington DC 20002

Re: Preliminary Analysis of Ancillary Service Costs

Dear Greg:

Enclosed is a brief, preliminary analysis of the potential costs for increased ancillary services needed to accommodate variable energy resources (VERs). As we have discussed, properly analyzing this issue is extraordinarily difficult due to a lack of robust, reliable data, differing regional conditions and programs and a the lack of uniform agreement of what services should be included.

With that as background, we prepared the enclosed preliminary ancillary costs based on average all-in cost of wholesale electricity to serve load in each market. Average all-in costs comprise real-time locational marginal prices, capacity charges, transmission charges, various ancillary charges (including regulation, spinning reserves, and non-spinning reserves), and costs associated with the administration of the ISO/electricity market.

This preliminary analysis extracts itemized costs, from state of the market and other reports made available by the different ISOs, for regulation and reserves and illustrates them in the form of a bar chart. Also indicated are shares of these charges of total all-in average wholesale electricity costs. Note that these are ancillary service costs for the whole year averaged across total annual load served by each market. Actual market clearing prices for each ancillary service may be different from these figures and vary by location and market conditions.

Sources used in this analysis include (2009 data for all markets):

PJM State Of The Market - Executive Report, November 19, 2009
NYISO Monthly Report, December, 2010
CAISO Market Issues & Performance Report, April, 2010
ERCOT State of the Market Report, July 2010
ISO-NE Wholesale Load Cost Data downloaded directly from ISO-NE Website (accessed Feb 13, 2010)
MISO ISO Average Cost Paid by Load Report, December 20, 2010

For the New England wind example, we used ERCOT's higher costs for ancillary services (3.4% as opposed to 1.3% in ISO-New England) and assumed that the higher costs were entirely attributable to the integration of nearly 10 GW of wind in Texas (an assumption that is open to debate). Extrapolating these costs to ISO-NE indicates that while the overall cost of additional ancillary

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services may be low as a percentage of overall wholesale electricity costs, they could be significant if added to a wind farm's levelized cost of energy.

Please feel free to contact me if you have any questions.

All the best,

/s/

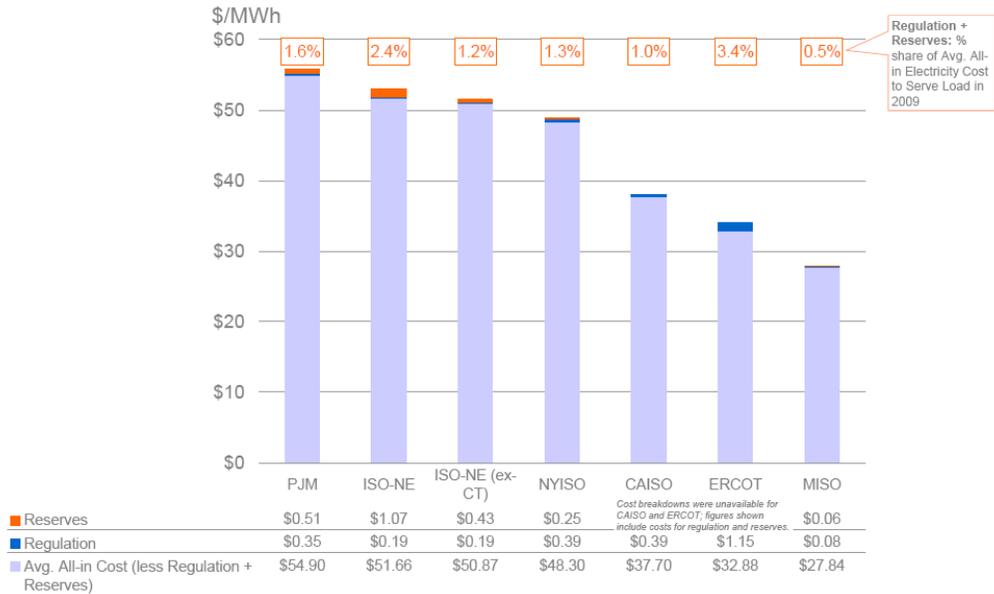
T.J. Roskelley
Vice President

Enclosure

Strategic Environmental Consulting

Ancillary Costs
March 2, 2011

Ancillary Service Costs (2009)

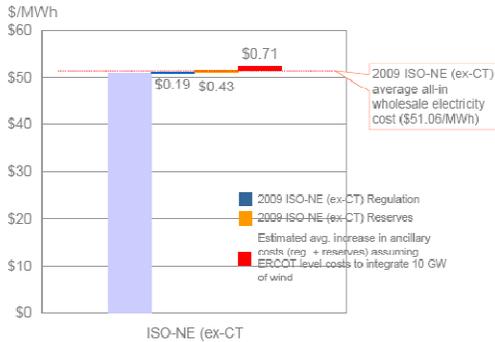


Average All-in Electricity Cost to Serve Load = Real-time LMP + Capacity + Transmission + Ancillary Market Charges (includes, among others, Regulation, Spinning Reserves, Non-spinning Reserves) + ISO Admin

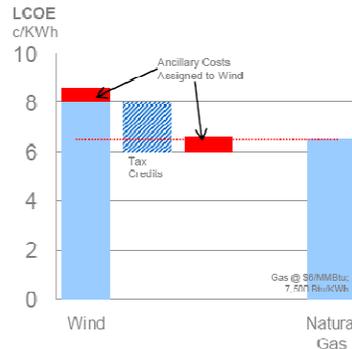
Hypothetical Scenario

- Assume that approx. 10 GW of wind (extent of wind integration in ERCOT as of Dec 2009) capacity is brought on-line in ISO-NE. Further assume that this capacity is located almost entirely in the state of Maine whereas the output of this capacity is delivered to load serving market participants in ISO-NE.
- This addition of new capacity will require an attendant increase in the level of ancillary services, especially regulation and reserves, to serve load reliably. Because wind is an intermittent resource that is not easily dispatched, there may be additional ancillary services necessary to address its inherent variability and unpredictability.
- Changing requirements for ancillary services and their procurement to accommodate wind will potentially have an impact on ancillary service market clearing prices. This will be reflected in the total wholesale electricity procurement costs of the load serving market participants depending on the allocation methodology.
- To the extent that a causation relationship can be established between changes in costs of ancillary services and increasing wind capacity integration, the costs may be directly assigned to the wind generators. Assignments may be based on metered energy (i.e., MWh output) or installed capacity (i.e., MW). Cost assignments based on energy would cause the bid prices of the wind generators to rise (passed to market participants as variable costs) while those based on installed capacity would increase the fixed or going forward costs.

Illustrative impact of integrating 10 GW of wind capacity in ISO-NE on average all-in wholesale electricity cost



Assigning costs directly to wind generators could reduce their competitiveness significantly



Assumptions: Avg. ancillary services (regulation + reserves) cost 1.3% of total avg. all-in cost of wholesale electricity. Texas' higher ancillary costs (3.4% of total all-in costs) stem from integration of almost 10 GW of wind capacity, by far the highest among all the ISOs, and these additional ancillary costs can be linearly extrapolated to adjust for ISO size and avg. total all-in costs (to account for the fact that ancillary costs include lost opportunity costs, which are dependent on energy market prices).