Day-Ahead Ancillary Services Initiative (DASI)

Procure and price services required for a reliable operating plan in the Day-Ahead Energy Market

Ben Ewing
PRINCIPAL ANALYST

Andrew Withers
ECONOMIST

Day-Ahead Ancillary Services Initiative

WMPP ID: 162

Proposed Effective Date: March 1, 2025

- With DASI, the ISO seeks to procure and price the ancillary service capabilities needed to meet real-time energy demand and deliver a reliable, next-day operating plan with an evolving generation fleet
  - With DASI, these reliability requirements will be satisfied within the clearing of the day-ahead market (DAM)
- Today's discussion includes:
  - Continued discussion of DASI impact assessment
  - Initial discussion of Tariff language

DASI go-live date considerations

- Window of consideration: Dec 1, 2024 – Mar 31, 2025
- Implementing DASI midway through a winter season is not preferable
  - Participants have expressed a desire to gain experience with the design prior to periods with higher potential for stressed conditions
- The DASI implementation is expected to be a significant effort
  - Allowing additional time to be dedicated to this work will help to ensure that it is successful
- The proposed March 1, 2025 go-live date balances these considerations
  - With this go-live date, the final Forward Reserve Procurement Period will be October 1, 2024 – February 28, 2025

DASI IMPACT ASSESSMENT

Overview of today's presentation

- We provide indicative estimates of DASI's impact on other ISO markets
  - Forward Reserve Market (FRM)
  - Net Commitment Period Compensation (NCPC)
  - Estimate of total impact on E&AS costs
  - Forward Capacity Market (FCM)
- Appendix includes responses to stakeholder requests following April MC
  - Provide estimate of how DASI may impact residential retail rates
  - Impact of a $10 strike price adder on DA A/S risk premiums
  - Share detailed, hourly clearing and pricing data from DASI simulations used to estimate cost impacts

IMPACT OF THE FRM SUNSET ON E&AS COSTS/REVENUES

The FRM sunset tends to reduce E&AS costs/revenues

- ISO proposes a planned Tariff effective date for DASI of March 1, 2025. The last Forward Reserve Procurement Period will end on Feb 28, 2025
- To assess the impacts of eliminating the FRM as part of DASI, we provide estimates of the following E&AS cost changes that occur because of the FRM sunset:
  - Elimination of FRM payments (TMNSR and TMOR credits): This tends to *decrease* E&AS costs/revenues
  - Elimination of FRM penalties (Failure to Reserve and Failure to Activate penalties): This tends to *increase* E&AS costs/revenues
- Potential changes to RT costs are not accounted for in our methodology, as they are expected to be small relative to the change in FRM payments and would be difficult to estimate

The FRM sunset tends to reduce E&AS cost/revenues (*cont'd*)

- For the IA study period (2019 – 2021), the removal of the FRM would have reduced annual E&AS cost by $26.4 million, on average (data source: 2021 IMM AMR, Figure 7-10)
  - FRM penalty rates are proportional to FRM payment rates
  - Historically, FRM penalties tend to be much smaller than FRM payments. For this reason, eliminating the FRM tends to reduce costs

E&AS Cost/Revenue Reduction due to FRM Sunset, 2019 - 2021 ($ million)			
	Total FRM Credits [1]	Total FRM Penalties [2]	Change in E&AS Cost due to FRM Sunset [3]
Calculation			[2] - [1]
2019	$ 39.4	$ 2.0	$ (37.4)
2020	$ 23.5	$ 0.6	$ (22.9)
2021	$ 19.9	$ 1.0	$ (18.9)
Average	$ 27.6	$ 1.2	$ (26.4)

Recent Forward Reserve Auctions have cleared at higher prices than those during the IA study period

- Using publicly available information on Forward Reserve Auction clearing and pricing outcomes, estimate cost reduction associated with FRM sunset in 2022 and 2023
  - In 2022, estimate total FRM credits equal to $66.1 million and penalties* equal to $2.8 million, for estimated cost reduction of $63.3 million
  - For first nine months of 2023, estimate FRM credits equal to $94.4 million and penalties* equal to $4.0 million, for estimated cost reduction of $90.4 million
  - If observed auction clearing outcomes in 2022 – 2023 persisted through 2025, then the FRM sunset would reduce E&AS costs in the range of $60 - $100 million per year
  - For an explanation of higher FRA clearing prices in recent auctions, please see Spring 2022 Quarterly Markets Report and Summer 2022 Quarterly Markets Report

*We estimate the penalty values based on the historic average ratio of credits to penalties

DASI'S IMPACTS ON DA NCPC

NCPC rules will be revised to account for DASI

- DASI introduces new revenues, and new costs, in the DAM
  - Suppliers of DA energy and DA A/S will receive FER, EIR, and FRS payments
  - Suppliers will reflect the costs to provide new services in their DA A/S offers
- ISO expects to consider changes to NCPC rules, in association with DASI, in 2024
  - These rules have not yet been assessed or designed
- For purposes of this impact assessment, we employed a simplistic methodology to estimate DASI's effect on NCPC

DASI is expected to reduce DA NCPC significantly

- Our methodology provides an estimate of DASI's potential impact on historical NCPC payments
- Over the IA study period, we estimated an average annual reduction in DA NCPC payments of $9 million (74% reduction in total DA NCPC)
- Methodology uses historical DA NCPC credits as a starting point, and then decreases those credits by new, net DASI-related revenues, as these revenues are now 'in market'
- More specifically, at the resource level, we calculate:
  - DASI Estimated DA NCPC Credit = max{0, Historical DA NCPC Credit – (FER Revenues + DA A/S Revenues – DA A/S Offer Costs)}
- Compared this value to historic DA NCPC credits to get estimated change

DASI is expected to reduce DA NCPC significantly (cont'd)

- For the IA study period (2019 – 2021), DASI is estimated to reduce total annual DA NCPC credits to between $2.6 and $3.7 million dollars per year
  - Includes DA NCPC for 1st contingency, LSCPR, Volt/VAR, etc., combined
- This represents an average annual decrease in total DA NCPC Credits of $9.1 million dollars, relative to current market rules

	Estimated DA NCPC Credit	Change in DA NCPC Credits due to DASI
2019	$ 3.2	$ (9.4)
2020	$ 2.6	$ (7.0)
2021	$ 3.7	$ (10.8)
Average	$ 3.2	$ (9.1)

DASI'S TOTAL IMPACT ON E&AS COSTS/REVENUES

Combine estimated E&AS cost change estimates from April with those presented today for DASI's total E&AS impact

- To estimate the total impact of DASI on E&AS costs, we take cost impact estimates from the simulator that were presented in April, and then include the additional cost impact estimates from the FRM sunset, and changes to NCPC credits, as discussed above
- We present these estimates on next slide

Total EA&S costs are estimated to increase by approximately $100 million per year during the 2019-2021 study period

	Change in E&AS Costs due to DASI [1]	Change in E&AS Costs due to FRM Sunset [2]	Change in E&AS Costs due to Changes in DA NCPC [3]	Total Estimated Change in E&AS Costs due to DASI [4]	Percent Change in Total Wholesale Market Costs [5]
Calculation				[1] + [2] + [3]	
2019	$ 127.1	$ (37.4)	$ (9.4)	$ 80.3	0.8%
2020	$ 104.4	$ (22.9)	$ (7.0)	$ 74.5	0.9%
2021	$ 188.2	$ (18.9)	$ (10.8)	$ 158.5	1.4%
Average	$ 139.9	$ (26.4)	$ (9.1)	$ 104.4	1.1%

Total EA&S costs estimates: Notes and interpretations

- On the previous slide, Column [1] is the estimated yearly change in E&AS costs due to DASI presented on slide 29 of the DASI MC presentation from April 2023. These estimates account for:
  - Increases in DA credits (energy, FRS, EIR, FER)
  - Cost reductions due to DA A/S closeout charges and shifting some energy purchases from RT to DA
- Column [4] gives the combined impact of cost increases due to DASI, the FRM sunset, and changes to DA NCPC
  - Accounting for the FRM sunset and changes to DA NCPC, total E&AS costs are expected to increase (on average) by $104.4 million per year due to DASI, which represents a 1.1% increase in total wholesale market costs
  - If future FRM prices (2025 and beyond) would have been closer to those observed in 2022 and 2023 than those in 2019 – 2021, we may expect these cost increases to be lower due to greater cost savings associated with the FRM sunset

DASI'S IMPACTS ON CAPACITY COSTS

Expect long-run capacity costs to decrease by roughly the estimated increase in E&AS costs due to DASI

- After accounting for the FRM sunset and changes to DA NCPC, DASI increases E&AS revenues by approximately $100 million per year
- These increased E&AS revenues reduce, in the aggregate, the "missing money" that resources recover via the capacity market
- In the long-run, we expect capacity costs to decrease in a manner that is roughly commensurate with the estimated increase in E&AS revenues (meaning total wholesale market costs/revenues are unchanged)
  - In the short run, however, predicting changes to capacity costs is more difficult (next slide)

DASI's simultaneous impact on capacity supply and demand curves make it difficult to predict short-run capacity cost changes

Rev. 1 – Use correct acronym.

- While most technology types are expected to see an increase in E&AS revenues from DASI (see slides 36 and 38 of April 2023 MC presentation), the FRM sunset will reduce E&AS revenues for some resources
  - In other words, DASI's impact on E&AS revenues will vary across resources which will change the ordering of capacity supply curve offer/bid prices, and which resources are most likely to impact the capacity clearing price
- Further, changes to E&AS revenues due to DASI and the FRM sunset could lead to changes in Net CONE, which in turn may impact the "shape" of the capacity demand curve
  - With a generally elastic (flat) supply curve near the margin, however, changes in Net CONE may have a minimal impact on prices; the 'reordering' of the supply stack would be the dominant short-run impact
- In summary, potential changes to capacity supply and demand curves, and potential interactions with capacity market design changes, make it difficult to estimate near-term changes in capacity costs

DASI Impact Assessment – Key Takeaways

- Total energy and ancillary service costs are estimated to increase by an average of $100 million dollars per year during the 2019 – 2021 study period as a result of DASI
  - These changes reflect estimated changes in DA credits, estimated changes due to the FRM sunset, and estimated changes in DA NCPC
  - If FRM prices from 2022 and 2023 are more indicative of expected prices going forward, reduction in costs/revenues from removing FRM may be higher than values estimated for 2019 through 2021
- In the long run, we expect capacity costs to decrease in a manner that is roughly commensurate with the estimated increase in E&AS revenues
  - Simultaneous changes to capacity supply and demand curves make it difficult to estimate near-term changes to capacity costs

FREQUENTLY ASKED QUESTIONS

FAQ: What obligations are associated with a DA A/S award?

- Only physical resources (generators, DRRs, DARDs) with energy supply offers or demand bids may submit offers for DA Ancillary Services
  - DA A/S awards are based on physical capabilities that are audited by the ISO (i.e., CLAIM10/30 capability, ramp rate)
- Participants making supply offers for energy and ancillary services in New England are subject to the Market Participant Service Agreement
  - "The Market Participant hereby warrants to the ISO that . . . whenever it submits a Supply Offer for Energy or supply offer for Ancillary Services or a demand response service, it has the capability and the intention to provide that service . . . " (Section 4.2)

FAQ: What obligations are associated with a DA A/S award? (*cont'd*)

Introduced November MC

- Sellers of DA A/S have a "no excuses" settlement obligation
  - A seller of DA A/S must close out its DA A/S position per the proposed settlement rules, which are based on replacement-cost logic
- The ISO does not propose additional performance-based obligations, such as an obligation to procure fuel regardless of price
  - Sellers should not be induced to incur costs that are greater than the benefit they bring to the system, which corresponds with the replacement cost logic noted above
    - *Ex:* It is more cost effective for (say) a higher cost resource that sold DA A/S to pay the replacement cost to allow lower cost resource without a DA A/S position (if available) to serve RT energy demand, if the RT co-optimized dispatch finds that is a more efficient RT solution
  - Rules associated with specific performance obligations are challenging to design, enforce, and defend as necessary; and they may increase consumers' costs in excess of their benefit (i.e., exceed the avoided cost of replacement energy)
  - IMM is generally supportive of this position
    - *See* IMM comments on ESI from 2020, section 6

PROPOSED TARIFF CHANGES

Overview of Proposed Tariff Changes

- Tariff changes are required in support of DASI
  - New defined terms
  - New provisions
- The proposed changes are similar to those discussed with the Energy Security Improvements (ESI) proposal in 2020
  - Proposed DASI mitigation rules are new, and reflect the most significant Tariff redline additions to those introduced with ESI
- Today's presentation provides a walkthrough of the major Tariff changes associated with DASI
  - Minor changes, such as updated cross-references, replacement of defined terms, and adjustment of section titles are not individually flagged in this presentation
  - A complete set of proposed Tariff redlines is available with today's materials

Overview of Proposed Tariff Changes (*cont'd*)

The proposed Tariff changes we will discuss today are organized as follows:

- Defined terms (I.2.2)
  - New defined terms
  - Updated defined terms
- New provisions, and substantively modified existing provisions
  - DASI-related inputs, eligibility, and co-optimization (III.1.8, III.1.10.8)
  - Pricing rules (III.2.6)
  - Settlements (III.3.2.1)
  - FRM (III.9)
- Other assorted updates
- Mitigation (Appendix A) – to be discussed separately, later today

New Defined Terms

Tariff Section	New Defined Term	Reason
I.2.2	• Day-Ahead Market • Day-Ahead Ancillary Services • Day-Ahead Ancillary Services Market	Terms to allow reflection of jointly co-optimized energy and A/S day-ahead market throughout the Tariff
I.2.2	• Day-Ahead Ancillary Services Offer • Maximum Daily Award Limit	New offer parameters associated with DASI
I.2.2	• Day-Ahead Ancillary Services Strike Price	Define the strike price

New Defined Terms (*cont'd*)

Tariff Section	New Defined Term	Reason
I.2.2	• Day-Ahead Flexible Response Services Demand Quantities • Day-Ahead Ten-Minute Spinning Reserve Demand Quantity • Day-Ahead Total Ten-Minute Reserve Demand Quantity • Day-Ahead Minimum Total Reserve Demand Quantity • Day-Ahead Total Reserve Demand Quantity • Forecast Energy Requirement Demand Quantity	Terms to reflect the requirements that will be applied in the DAM with new DASI constraints

New Defined Terms (*cont'd*)

Tariff Section	New Defined Term	Reason
I.2.2	• Day-Ahead Flexible Response Services • Day-Ahead Ten-Minute Spinning Reserve • Day-Ahead Ten-Minute Non-Spinning Reserve • Day-Ahead Thirty-Minute Operating Reserve • Day-Ahead Energy Imbalance Reserve	Terms to reflect the new products that can contribute to satisfying DASI constraints

New Defined Terms (*cont'd*)

Tariff Section	New Defined Term	Reason
I.2.2	• Day-Ahead Ten-Minute Spinning Reserve Obligation • Day-Ahead Ten-Minute Non-Spinning Reserve Obligation • Day-Ahead Thirty-Minute Operating Reserve Obligation • Day-Ahead Energy Imbalance Reserve Obligation	Terms to reflect DA A/S awards
I.2.2	• Forecast Energy Requirement Penalty Factor • Forecast Energy Requirement Price	New FER-related terms

Updated Defined Terms

Tariff Section	Updated Defined Term	Reason
I.2.2	Day-Ahead Energy Market	Added cross-reference to III.1.8
I.2.2	Day-Ahead Prices	Updated to reflect DASI-related prices as well as DA LMP
I.2.2	Forward Reserve Procurement Period	Modified to reflect planned FRM sunset
I.2.2	Lead Market Participant	Modified to reflect ability to submit DA A/S offers
I.2.2	Reserve Constraint Penalty Factors (RCPFs)	Modified to reflect usage of RCPFs for FRS-related DA A/S constraints

New Sections and Substantive Revisions – DA A/S Inputs, Eligibility, and Co-optimization

Tariff Section	Description of Change	Discussed at MC (slides)
III.1.8	New DA A/S and FER section	
III.1.8.1	DA A/S offer format and requirements	Dec 2022 (11-14)
III.1.8.2	DA A/S Strike Price determination	Nov 2022 (45-56) Apr 2023 (3-14) Memo
III.1.8.3	FRS constraint Demand Quantity specifications	Jan 2023 (28)
III.1.8.4	FER constraint Demand Quantity specification	Jan 2023 (11)
III.1.10.8(a)	Edits to focus provision exclusively on the DAM, and to clarify the key inputs and considerations that are part of the co-optimized DAM clearing process	Feb 2023 (8-9)
III.1.10.8(a)(i),(ii)	Provisions covering resource-level eligibility to provide FRS and EIR	Feb 2023 (4-5)

New Sections and Substantive Revisions – Pricing

Tariff Section	Description of Change	Discussed at MC (slides)
III.2.6.1(a)	Edits to clarify calculation of DA LMPs with consideration of DA A/S constraints	Jan 2023 (16-36)
III.2.6.2(a)	Describes the calculation of FRS clearing prices	Jan 2023 (26-33)
III.2.6.2(b)	Describes the calculation of the FER clearing price	Jan 2023 (16-25)
III.2.6.2(c)	Specifies FRS constraint RCPFs, linking to existing RT reserve constraint RCPFs	Jan 2023 (32)
III.2.6.2(d)	Specifies FER constraint penalty factor	Jan 2023 (32)

New Sections and Substantive Revisions - Settlements & FRM

Tariff Section	Description of Change	Discussed with Committee
III.3.2.1(a)(2)	Defines FRS and EIR obligations (award quantities)	Jan 2023 (10-11, 30)
III.3.2.1(q)(1)	FRS and EIR credit calculations	Feb 2023 (29)
III.3.2.1(q)(2)	FRS and EIR closeout charge calculations	Feb 2023 (30)
III.3.2.1(q)(3)(i)	Allocation of FRS credits as charges	Feb 2023 (31)
III.3.2.1(q)(3)(ii)	Allocation of FRS closeout charges as credits	Feb 2023 (34)
III.3.2.1(q)(4)(i)	FER credit calculation	Feb 2023 (29) Apr 2023 (48-50)
III.3.2.1(q)(4)(ii)	Allocation of FER and EIR credits as charges	Feb 2023 (32)
III.3.2.1(q)(4)(iii)	Allocation of EIR closeout charges as credits	Feb 2023 (34) Apr 2023 (51-52)
III.9.1	Edits reflecting sunset of FRM, and truncation of final procurement period	Mar 2023 (11-15)

Summary of Proposed Tariff Changes - Other Assorted Updates

Tariff Section	Description of Change	Reason
III.1.7.6(a)	Added sentence to reflect co-optimization of energy and A/S in the DAM with DASI	Clarity
III.1.7.9A	New provision noting that DA A/S awards will be paid at associated clearing prices	Clarity
III.1.10.1A(l)	New provision noting that Lead Market Participants may submit DA A/S supply offers	Clarity
III.1.10.8(c)	Added sentence related to satisfying RT reliability requirements	Reflecting RT needs in this provision, due to restructuring of III.1.10.8(a)
III.2.1 III.2.2	Edits to reflect existence of hourly FRS and FER clearing prices, to be determined by the co-optimized DAM	Clarity

Excess Energy Condition rules are not reflected in current redlines

- At the February MC (slides 17-22), we discussed updated rules for handling excess energy conditions in the DAM with DASI
- Since that time, we have identified other adjustments, unrelated to DASI, that we may make to the related tariff provision that require further time to evaluate
- We expect to bring excess energy condition Tariff language as part of DASI conforming changes
  - The approach is expected to largely reflect that discussed in February
  - These rules will be in place for March 1, 2025 (i.e., DASI go-live)

STAKEHOLDER SCHEDULE

Stakeholder Schedule

Stakeholder Committee and Date	Scheduled Project Milestone
Markets Committee - Oct. 12-13, 2022	Overview and initial proposed design discussion
Markets Committee - Nov. 8-10, 2022	Continue design discussions
Markets Committee - Dec. 6-8, 2022	Continue design discussions
Markets Committee - Jan. 10-12, 2023	Continue design discussions
Markets Committee - Feb. 7-9, 2023	Continue design discussions
Markets Committee - Mar. 7-9, 2023	Continue design discussions and discuss strike price adder approach
Markets Committee - Apr. 11-13, 2023	Continue design discussions and initial review of impact analysis results
Markets Committee - May 9-11, 2023	Present draft of the ISO's proposal and initial Tariff redlines; Continue review of impact analysis results; Discussion of any potential amendments*
Markets Committee - Jun. 6-7, 2023	Present any design refinements to the ISO's proposal and review Tariff redlines focusing on revisions since the prior meeting; Continue review of impact analysis results; Continue discussion of any potential amendments to the ISO proposal including Tariff language*
Markets Committee - Jul. 11-12, 2023	Vote on DASI proposal and any proposed stakeholder amendments
Participants Committee - Aug. 3, 2023	Vote on DASI proposal and any proposed stakeholder amendments

*Members should provide their materials in advance so that they can be distributed by the posting date for the relevant MC meeting and should work with NEPOOL Counsel in the drafting of any desired Tariff changes or amendments to the ISO proposal

Questions

Ben Ewing

(413) 535-4361 | BEWING@ISO-NE.COM

Andrew Withers

(413) 540-4797 | JWITHERS@ISO-NE.COM

APPENDIX – IMPACT ASSESSMENT

Response to question about DASI's impact on residential retail power supply rates

- Stakeholders have expressed interest in how DASI may impact residential retail power supply rates
- The ISO does not set residential retail rates, and the relationship between wholesale rates and residential retail supply rates is not one-for-one and can vary state to state
  - See pages 31 and 32 of the 2022 Report of the Consumer Liaison Group (2022 CLG Report)
- The ISO cannot estimate how an increase of wholesale market costs resulting from DASI could impact any individual residential customer's retail bill without extensive study or simplifying assumptions that would likely impact the reliability of such estimate

Response to question about DASI's impact on residential retail power supply rates (*cont'd*)

- Using the values from Table 6-1 of the 2022 CLG Report, the following makes the simplifying assumption that an estimated percentage increase in wholesale market costs translates into an equivalent percentage increase in residential rates

Year	Estimated Pct. Increase in Wholesale Market Costs with DASI	Wholesale Market Costs from Table 6-1 (¢/kW)	Estimated Wholesale Market Costs with DASI (¢/kW)	Residential Retail Power Supply Rates from Table 6-1 (¢/kW)	Estimated Residential Retail Power Supply Rates with DASI (¢/kW)
2019	0.8%	6.13 – 6.20	6.18 – 6.25	7.24 – 13.11	7.30 – 13.21
2020	0.9%	4.82 – 4.88	4.86 – 4.92	6.41 – 11.97	6.47 – 12.08
2021	1.4%	6.63 – 6.75	6.72 – 6.84	9.82 – 15.18	9.96 – 15.39

- As explained, however, the relationship between wholesale market costs and residential rates is not this simple
- The above also does not show the increase in supply rates in the context of other retail rates on a residential customer's bill (i.e. distribution and transmission rates)

How the strike price adder impacts DA A/S offer risk premiums

- In April, stakeholders expressed interest in understanding how the strike price adder impacts risk premiums included in DA A/S offers
  - On the following slides, we compare percentiles of risk premiums included in offers associated with the base strike price to risk premiums included in offers associated with the $10 strike price adder
- Due to the volume of data associated with the IA, these comparisons are made for two months
  - Feb 2021: Highest average historical DA Hub LMPs of any month in 2021
  - May 2021: Lowest average historical DA Hub LMPs of any month in 2021
- In both cases (base strike price and strike price adder), risk premiums are modest, but the strike price adder reduces risk premiums when they are non-zero, relative to the base strike price
- Recall, IA assumes resources use risk premium methodology outlined in section 2.3 of the competitive offer memo

How the strike price adder impacts DA A/S offer risk premiums (*cont'd*)

- February 2021, percentiles for risk premiums included in cleared DA A/S offers

Percentile	50	75	90	95
Base	$ 0	$ 0	$ 0	$0.50
$10 Adder	$ 0	$ 0	$ 0	$0.35

- February 2021, percentiles for risk premiums included in all DA A/S offers

Percentile	50	75	90	95
Base	$ 0	$ 0	$0.36	$0.89
$10 Adder	$ 0	$ 0	$0.21	$0.68

All risk premiums are in $/MWh, and are weighted by resource EcoMax

How the strike price adder impacts DA A/S offer risk premiums (*cont'd*)

- May 2021, percentiles for risk premiums included in cleared DA A/S offers

Percentile	50	75	90	95
Base	$ 0	$ 0	$ 0	$0.05
$10 Adder	$ 0	$ 0	$ 0	$0.03

- May 2021, percentiles for risk premiums included in all DA A/S offers

Percentile	50	75	90	95
Base	$ 0	$ 0	$0.03	$0.26
$10 Adder	$ 0	$ 0	$0.02	$0.20

All risk premiums are in $/MWh, and are weighted by resource EcoMax

Data request: Share hourly simulation results for the IA study period (2019 – 2021)

- Provide the following hourly clearing prices and quantities, for IA study period (Jan 1 2019 – Dec 31 2021):
  - Prices: DA Hub LMP (DASI), DA Ten Minute Spinning RCP, DA Total Ten Minute RCP, DA Total RCP, FERP
  - Quantities: DA TMSR, DA TMNSR, DA TMOR, EIR, DA Energy with DASI, DA energy under current market rules
- Please see the excel spreadsheet for data and further description