

February 17, 2022

EDAM working group #3 participants,

Below is a proposed revision to the working group #3 scope document based on the responses we received from the “homework” assignment. This is intended to be useful as roadmap of where we’ll need to go with the GHG market optimization approaches. It should also be useful to the developers of those proposals to guide their “version 2.0” proposals towards the areas of concern of the working group participants.

You’ll see my proposed edits in red below. Also, you’ll see certain codes/IDs below (e.g. RA-2, UC-1). These are references to the homework assignment responses that are posted to the working group website [here](#). I didn’t map all homework responses to this document as there were several responses that touched on the same issue or it was unclear to which topic I should assign the response.

We spent the Feb 17, 2022 meeting reviewing and revising this document. If you have other comments/questions, please raise them on the Feb 22, 2022 call.

Best,
 Kevin Head
 EDAM working group #3 facilitator

Issue	Key Market Design Question	Homework assignment question ID	Detailed Market Design Question(s)
1) General Accounting			
Area Identify GHG Compliance Area(s)	Are entities aligned that state boundaries are the GHG compliance area?	A	Decide: What should the GHG compliance area be? Options include: Geographic <ul style="list-style-type: none"> - State - GHG compliance area - Balancing Authority Area (BAA) - Load Serving Entity - International considerations

			Topics: <ul style="list-style-type: none"> - Boundaries (UA-1) and potential need for alignment of transmission boundary concepts developed in Transmission working group - Implications for BAA spanning multiple states (RA-2, RA-3) - Impacts to EIM - Rules that need to be established for renewable resource dispatch in/out of a GHG zone (UA-4)
Availability Eligibility to serve demand in the GHG compliance area	What rules for availability need to be developed for EDAM for GHG?	B	Decide: What will availability to serve load in a GHG compliance area look like? Options include: <ul style="list-style-type: none"> - Optional - Never - Always - Daily - Hourly Topics: <ul style="list-style-type: none"> - Determining availability - Supply resources election to make capacity available to support transfers to a GHG compliance area (RB-1, RB-2, UB-1)
Costs being optimized	Which costs should be included in the market optimization?		Are we optimizing: <ul style="list-style-type: none"> - Carbon prices? - RPS/CES? Types <ul style="list-style-type: none"> - Carbon pricing (including how to consider GHG costs reflected in natural gas prices) - Clean energy/renewable Transactions covered <ul style="list-style-type: none"> - GHG zone: <ul style="list-style-type: none"> o Generation w/in GHG zone o Imports into GHG zone - Non-GHG zone: <ul style="list-style-type: none"> o Generation w/in non-GHG zone o Exports into GHG zone
Emissions attribution	How should GHG emission attribution be determined?		Decide: How should emissions be attributed? Options include: <ul style="list-style-type: none"> - Resource specific - Unspecified

			<p>Transactions/jurisdictions</p> <ul style="list-style-type: none"> — Generator emissions covered — Delivered emissions covered
Participation options		A	<p>Determining emissions attribution with different participation options (RA-4):</p> <ul style="list-style-type: none"> - Imports at EDAM Boundaries - Pseudo-ties - Wheels through GHG compliance area - Virtual bids - Energy storage - Jointly-owned units - Self-scheduled resources (RA-1, UA-2, UA-3)
Multiple GHG Zones	Can the model accommodate multiple GHG zones? If so, how?	C	<ul style="list-style-type: none"> - From a technical perspective, can the model accommodate multiple GHG zones? (RC-2) - If it can, how are the following impacted? <ul style="list-style-type: none"> o Bidding between GHG zones (GHG zone A -> GHG zone B), linked versus unlinked o Bidding from non-GHG zone to multiple GHG zones o How market decides which GHG zone should be served - When there are multiple state GHG areas (e.g. WA and CA), how will the algorithm determine and prioritize which resources are deemed to which GHG area? (RC-1, UC-1)
2) Approach-specific Issues			
Baseline for evaluation of attribution (Resource-specific)	What should the baseline for evaluating GHG attribution?	D	<ul style="list-style-type: none"> - Under the EIM model today, GHG attribution quantity (MW) is limited by the upper economic limit minus the base schedule (note: not limited by WEIM incremental dispatch). Because there will be no base schedule in EDAM, what will the UEL be compared to determine GHG attribution? (RD-1) <ul style="list-style-type: none"> o RUC D+1 results? o 2nd IFM pass w/o transfers o Other - If RUCD+1 results, what improvements or additional requirements are needed to improve the RUC D+1 results? <ul style="list-style-type: none"> o Additional bidding requirements? o Improvements to the RUCD+1 forecast?

Hurdle rate calculation (unspecified)	How would the hurdle rate calculation work?	E	<ul style="list-style-type: none"> - Will the hurdle rate be an exogenous input into the market? What are the components of this calculation? (UE-9, UE-11, UE-12) - Will the hurdle rate be dynamic or static? (UE-2, UE-8) <ul style="list-style-type: none"> o If static, does this present gaming opportunities? - Will the hurdle rate be responsive to the prevailing market rate of GHG allowances? (UE-2) - Will the hurdle rate factor in the grid emissions intensity? If so, should it use an average emissions intensity or the marginal emissions intensity? How frequently would this be adjusted? Are out-of-zone clean resources that are "assigned to the zone" backed out of the unspecified rate (i.e. "the calculation of imports reflects that [the out-of-zone resources are] in the zone")? (UE-6) - Can EDAM SCs negotiate their own specified emissions rate? Would self-scheduled power qualify for a resource specific emission rate? (UE-1, UE-4)
Alternate pathways to serve GHG zones (unspecified)	What alternative pathways would exist for a resource in a non-GHG zone to serve a GHG zone?	F	<ul style="list-style-type: none"> - What are the criteria for resources outside the zone to be included inside the zone? (UF-1, UF-3) - Can entities voluntarily opt-in? If so, how frequently can this election be made? (UF-2)
3) Secondary Dispatch and Other Consequences			
Leakage minimization	What mechanisms exist to limit leakage and secondary dispatch?	G	<ul style="list-style-type: none"> - How would secondary dispatch occur in the model and how it is designed to limit it? (RG-1, RG-2, UG-1, UG-2)
Other consequences of approach	Are there other unintended consequences of the model and how does the approach deal with these?	E, G	<ul style="list-style-type: none"> - Resource-specific approach <ul style="list-style-type: none"> o Under the resource-specific approach, it is possible for resources to have been deemed to serve CA when it is impossible based on their transmission capabilities? If so, how does the approach deal with this? - Unspecified approach: <ul style="list-style-type: none"> o It is possible that non-emitting resources might need to clear the hurdle rate that is meant to reflect GHG costs? (UE-10) o Would the proposal shift concerns about secondary dispatch from the day-ahead and real-time markets into the forwarding contracting horizon? (UG-2) o In what specific way does this approach provide advantages to zero or low-emitting resources as compared to high-emitting resources outside GHG Regulation Areas? (UG-4)

4) Reporting and Settlements			
Reporting: Market Results	<p>How will EDAM provide transparency to the emissions intensity and market results to market participants?</p> <p>What type of information and at what granularity will GHG information be reported to support state reporting requirements?</p>	H	<ul style="list-style-type: none"> - What process can be developed to ensure that LSEs and other market participants subject to GHG/RPS/CES regulations will receive data necessary to satisfy compliance obligations? What entity is responsible for reporting imported energy into a GHG zone? (RH-2, UH-1, UH-2, UH-4, UH-6, UH-7) - Should we consider policy that is in effect/will be in effect by Jan 2024 or try to accommodate hypothetical reporting systems? - What data needs to be tracked for compliance and harmonization with clean energy policy purposes (including other instruments that attribute generation to load)? - How would energy be identified/tracked or tagged under a specified approach? (RH-3)
Settlements	How are GHG costs settled?	I	<p>What implications of GHG settlement must be incorporated into EDAM design?</p> <ul style="list-style-type: none"> - Will entities bearing GHG compliance obligations be made whole for purchasing credits? If so, how? (RI-1) - In the unspecified approach, how will the hurdle rate revenue be distributed to the suppliers? (UI-1, UI-3)
5) Miscellaneous			
Bidding of GHG costs	How will GHG costs be reflected to EDAM within, between, and outside a GHG zone?		<p>Topics:</p> <ul style="list-style-type: none"> - Should GHG costs be reflected in bids? If so, how? - How do cost reference level (DEBs and proxy costs) reflect GHG costs? Do they differ between DAM and RTM? How would this differ between WA and CA in terms of indices used? And how are they used in market power mitigation? How should GHG costs be calculated? How should GHG costs be reflected across GHG compliance areas?
Effects of EIM	What GHG bid and settlement implications arise from DA vs. RT deviation?	I, K	<ul style="list-style-type: none"> - Do we need to make updates to the RTM EIM GHG model to align it with EDAM? (UK-1) If not, what are the implication of this decision? (UK-2) - What allowable changes to either GHG quantity or bid price between DA and RT should be allowed? - What are the associated settlement impacts to any variation allowed? (UI-2)