DEPARTMENT OF ECOLOGY
State of Washington

Cap-and-Invest: Electricity Imports and Centralized Electricity Markets

June 26, 2025

Minor revision made 6/30/2025

Workshop materials

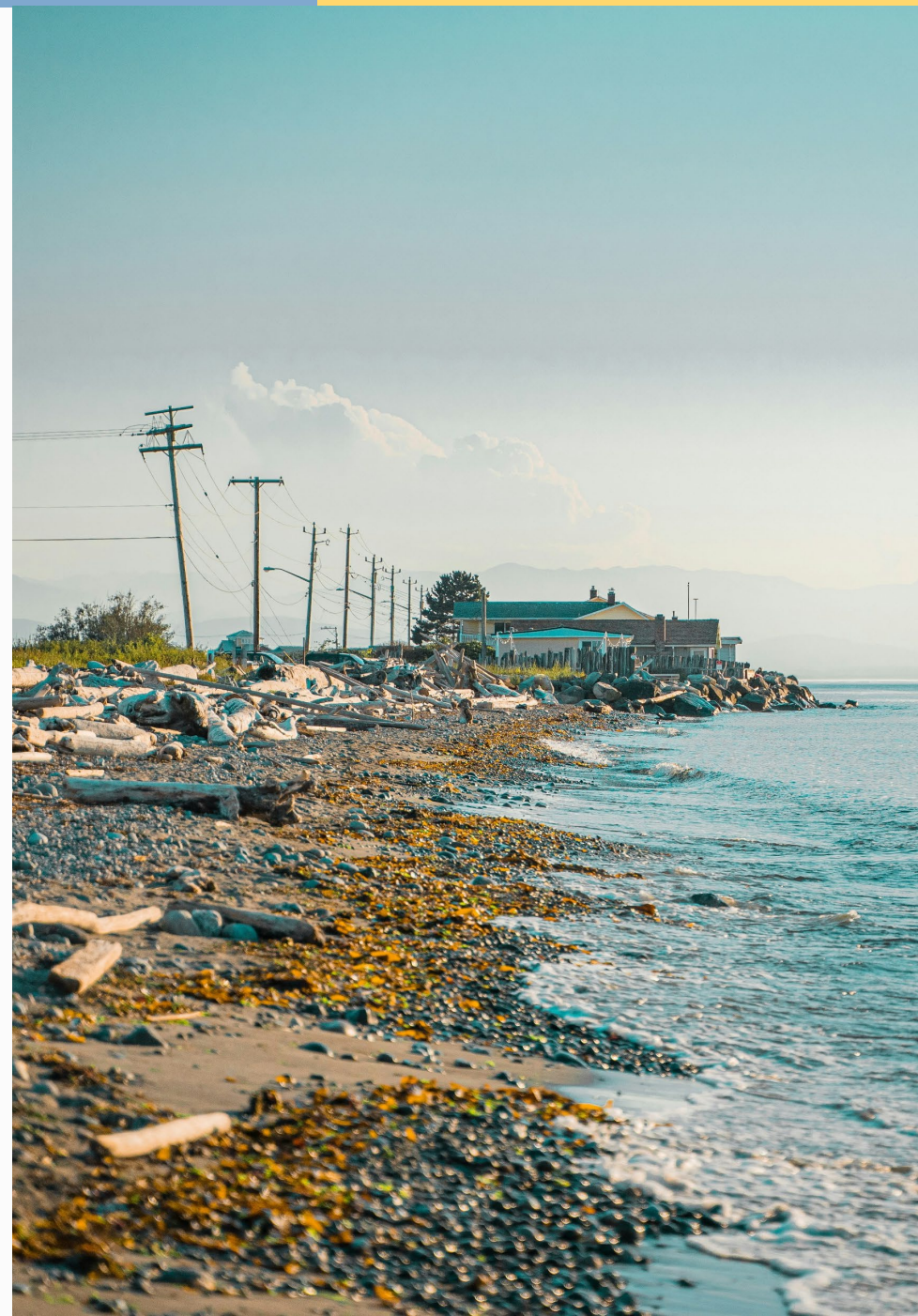
- Meeting is being recorded.
- Slides and recording will be posted on Cap-and-Invest Program Updates and Linkage rulemaking webpage
- Submit written comment, until 11:59 p.m. PT on July 18, 2025

Ecology staff introductions

- Surabhi Subedi – Facilitator/Technical Host, Climate Rulemaking Planner
- Camille Sultana – Cap-and-Invest Environmental Planner
- Kaleb Keefer – GHG Reporting & Verification Engineering Lead

Goals for workshop and written feedback

- Illustrate Ecology understanding of electricity imports and centralized electricity markets (CEMs) and potential interactions with the Cap-and-Invest Program
- Facilitate discussion of potential reporting and compliance obligation outcomes for electricity imported via CEMs
- Promote common understanding of electricity importer framework, CEMs, and potential interactions amongst all parties
- Identify areas for development (guidance, rule, Ecology-interested parties engagement)



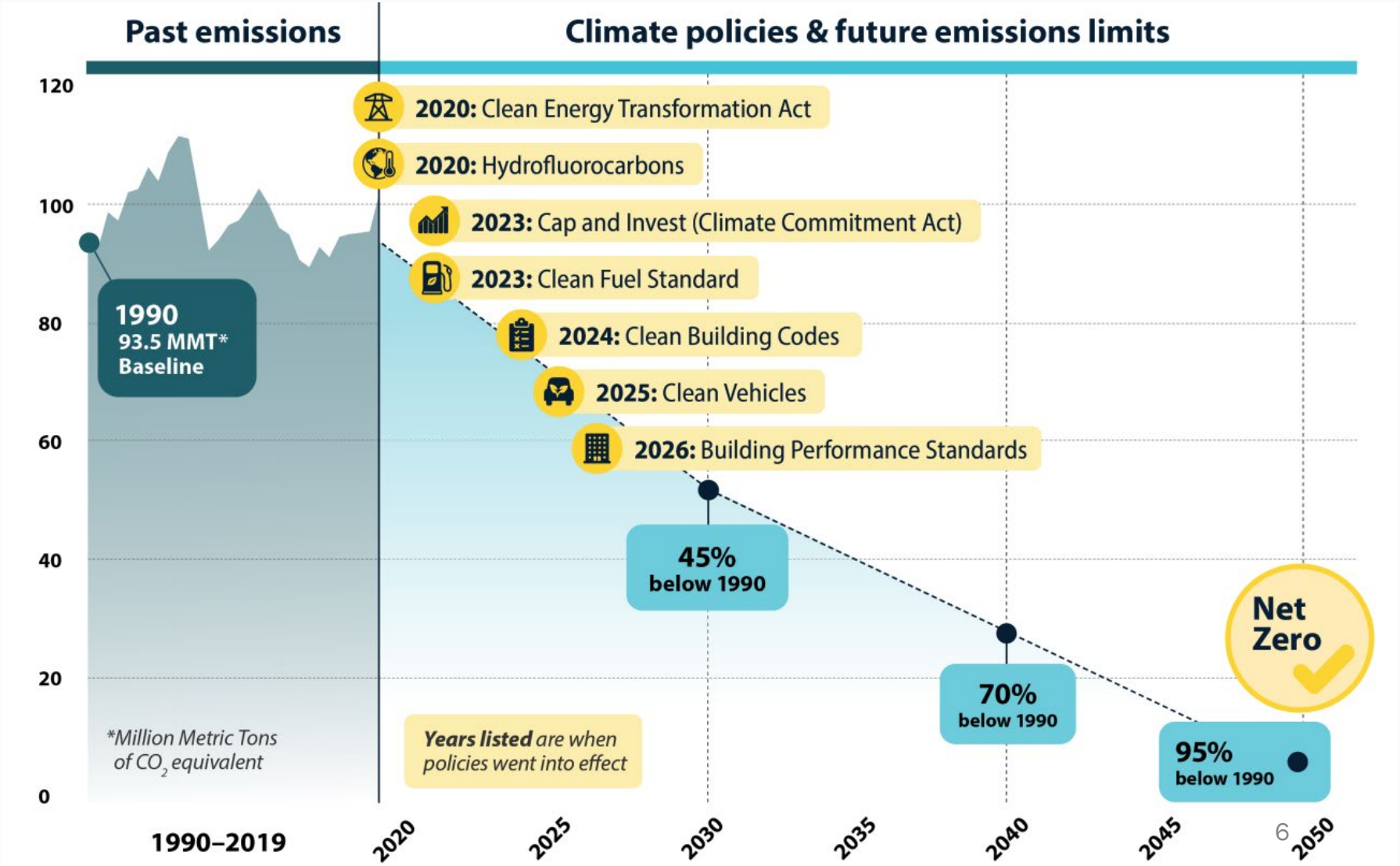
Agenda

1. Overview Cap-and-Invest, electricity imports, centralized electricity markets (CEMs)
2. Imported electricity definitions
3. Reporting and CEMs timelines
4. Surplus and emissions leakage
5. WA GHG Zone and system energy

WA statutory greenhouse gas emissions limits

HB 2311 (2020)

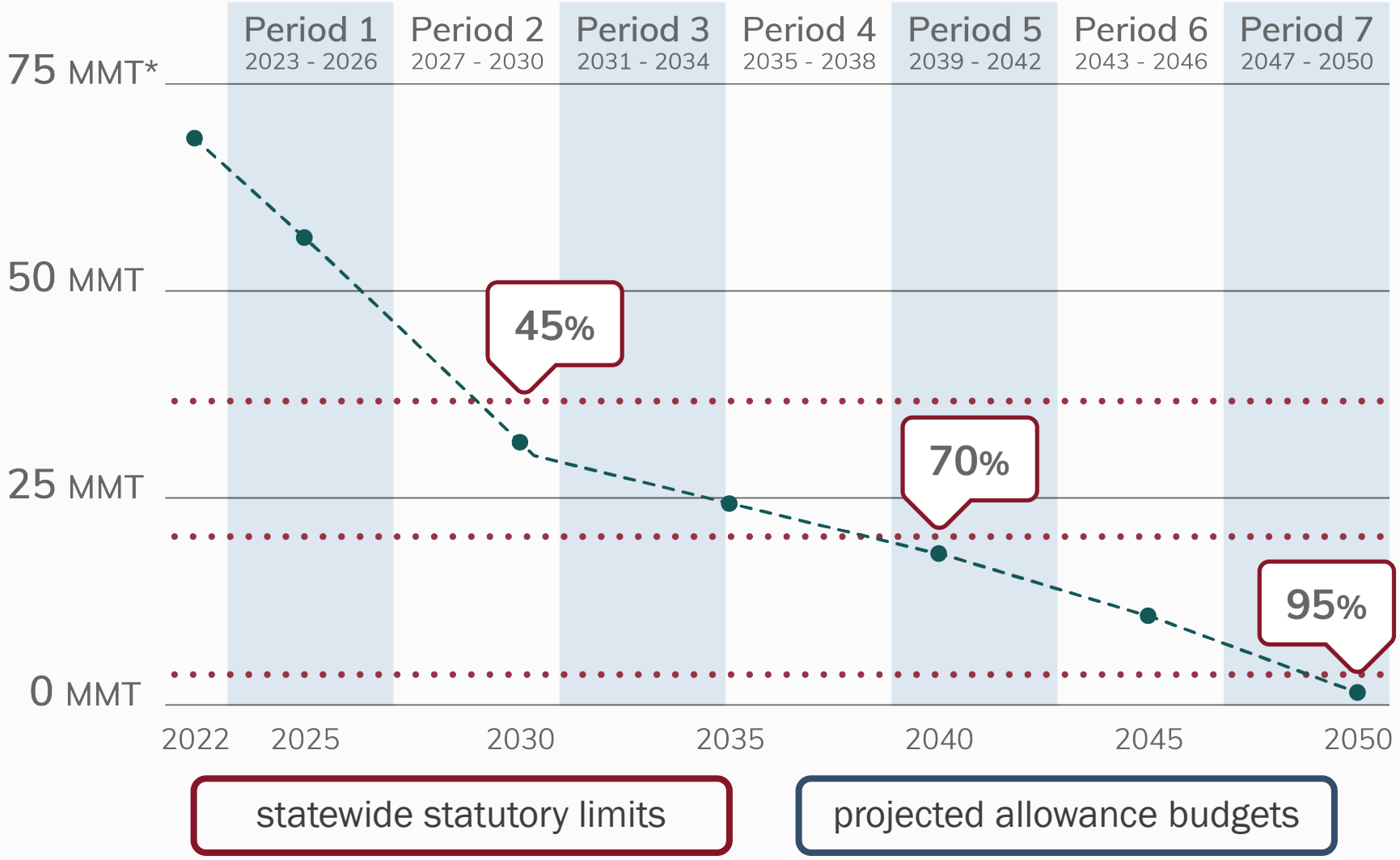
- 2030: 45% below 1990
- 2040: 70% below 1990
- 2050: 95% below 1990 and net-zero emissions



Cap-and-Invest is designed to support substantial GHG reductions necessary to meet the State's short and long-term statutory emission limits.

Projected Allowance Budgets Over Time

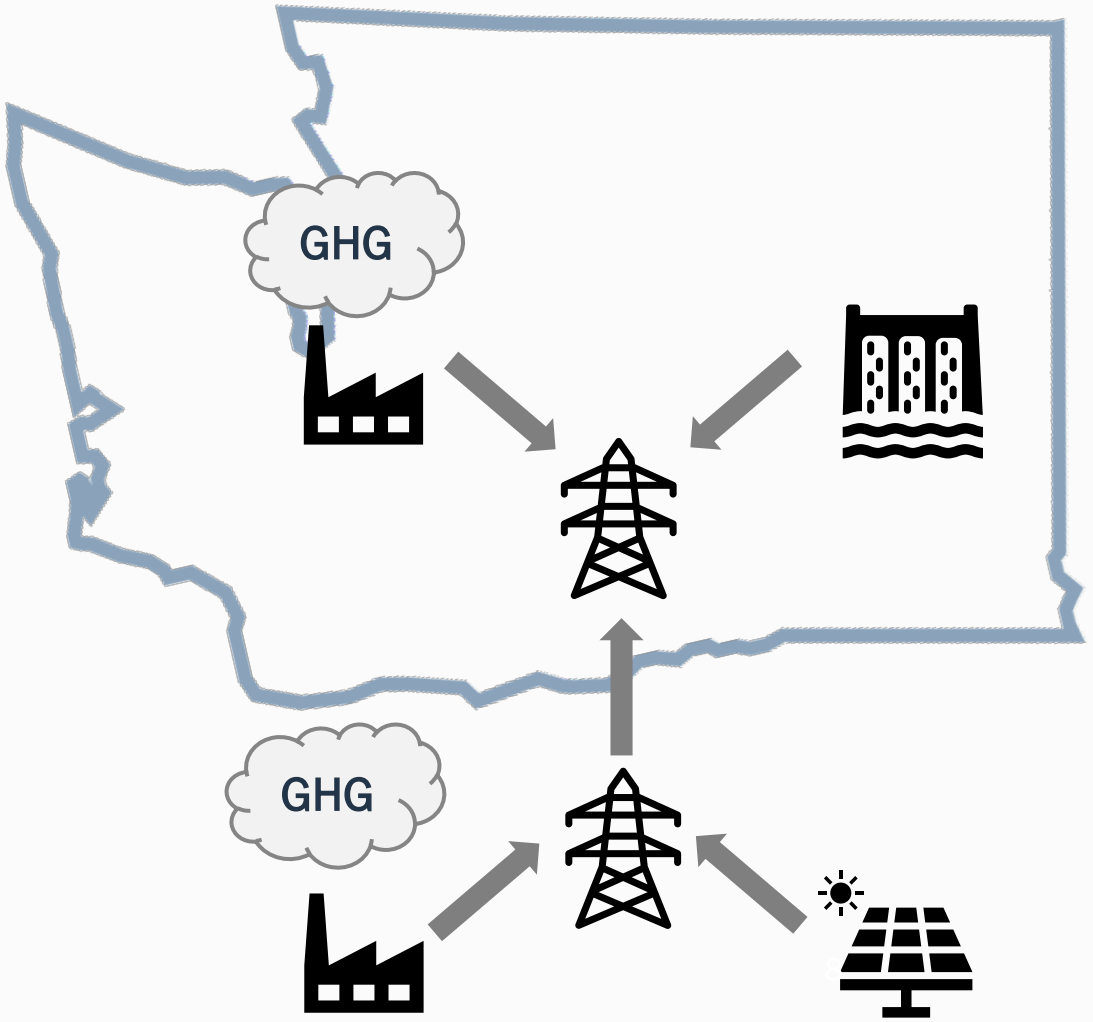
*million metric tons of CO2 equivalent



Electricity coverage under Cap-and-Invest

CCA directs Cap-and-Invest Program to cover both:

- In-state electricity generation
  - Facilities within WA state borders
- Imported electricity into WA
  - Electricity generated outside the state of Washington with a final point of delivery within the state



Limits emissions leakage by promoting consistent incentives for all generation serving Washington load.

Imported electricity overview

- "Imported electricity" means electricity generated outside Washington state with a final point of delivery within the state (RCW 70A.65.010(42), WAC 173-441-124(2)(q)).
- Responsible electricity importer follows first jurisdictional deliverer (FJD) approach
  - FJD is entity responsible for placing power onto Washington grid
- Emissions associated with MWh electricity imports reported per WAC 173-441-124
- Reporting and compliance obligations based on delivery of electricity by generation source
  - Specified imports: Emissions calculated from source-specific emission factors (EF)
  - Unspecified imports: Emissions calculated using default EF (0.428 MT CO2e/MWh)

Centralized electricity markets (CEMs) in WA

- Real-time market currently operating in WA
  - Western Energy Imbalance Market (WEIM) operated by CAISO
  - Participating BAs in WA: Avista, BPA, Avangrid, PSE, SCL, Tacoma, Pacificorp
  - Balancing energy serves relatively small portion of total WA load
- Day-ahead markets operation in near future
  - Extended Day-Ahead Market (EDAM) operated by CAISO
    - Expected launch Spring 2026
    - Pacificorp committed participant, entrance with EDAM launch
  - Markets+ (M+) operated by SPP (includes day-ahead and real-time functions)
    - Expected launch 2027
    - BPA policy decision to join M+, entrance expected no sooner than Oct 2028
  - Could serve high percentage of WA load: All load and resources within participating BAAs part of market optimization
- Potential WA entity participation: WEIM only, WEIM-EDAM, M+, no CEM participation

CEMs and electricity imports: Current rule status

Electricity markets rulemaking

- Updates to WAC 173-441 and WAC 173-446 adopted December 2024
- Established framework to account for specified imports through CEMs
  - Electricity from specified generation sources attributed/deemed to WA by the market operator treated as specified imported electricity.
  - Market participant offering an attributed/deemed resource (“deemed market importer”) is responsible electricity importer.

Electricity imports in Cap-and-Invest: Considerations

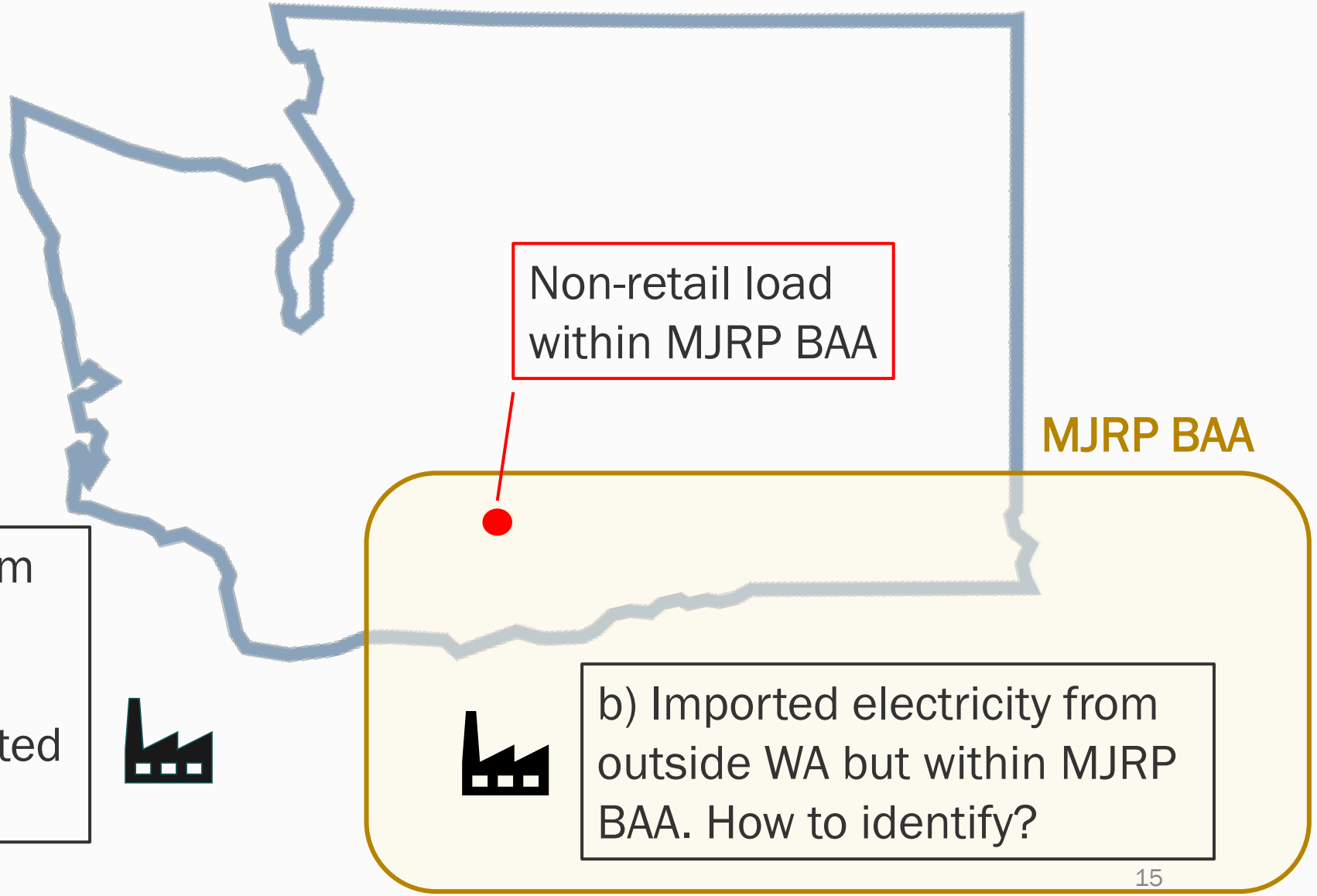
- Impart appropriate incentives to achieve state GHG emission limits
- Consistently and appropriately assess emissions and compliance obligations
- Consider risk for emissions leakage
- Cohesive across bilateral transactions and various CEMs designs
- Compatibility with potential linkage partners
- Implementation and reporting feasibility
- First-jurisdictional approach

Topic: Refining imported electricity definitions

Electricity importer definition

- “Electricity importer” definition establishes entity responsible (or point-of-regulation) for imported electricity
- Existing electricity importer definition does not completely address point-of-regulation for
  - Imported electricity that serves non-retail load within a BAA of a multi-state jurisdictional retail provider (MJRP)
  - Imported electricity attributed to WA through a CEM when the deemed market importer is a federal power marketing association (FPMA), and the federal power marketing association has not voluntarily elected to opt-in to the Program

Imported electricity to non-retail load within MJRP BAA: example



Initial concept: Non-retail load within MJRP BAA

WAC 173-446-(124)(2)(f)(i): For electricity that is scheduled with an e-tag to a final point of delivery into a balancing authority area located entirely within Washington state or electricity serving Washington load in a balancing authority area not entirely located within Washington state other than the retail load of a multi-jurisdictional electric company, the electricity importer is identified on the e-tag as the purchasing-selling entity on the last segment of the tag's physical path with the point of receipt located outside Washington state and the point of delivery located inside Washington state;

Requested feedback

- Does the suggested language adequately identify an electricity importer for imported electricity delivered to non-retail load within a MJRP BAA?
- If not, how should the definition of “electricity importer” be revised to identify an electricity importer for imported electricity delivered to non-retail load within a MJRP BAA?
- Is imported electricity delivered to non-retail load within a MJRP BAA typically a) identified on an e-tag or b) is the imported electricity sourced from within the MJRP BAA but not from generation within WA or associated with the MJRP’s retail load or c) other pathway?

Suggested concept: Backstop for FPMA deemed market importer

Backstop electricity importer suggested by interested parties in Electricity Markets rulemaking (WAC 173-441-124(2)(f)):

(iii) For imported electricity assigned, designated, deemed, or attributed to Washington through a centralized electricity market, the electricity importer is the deemed market importer;

...

(xx) If the importer identified under (f)(iii) of this subsection is a federal power marketing administration over which Washington does not have jurisdiction, and the federal power marketing administration has not voluntarily elected to comply with this chapter:

(a) Where the imported electricity is contracted to a Washington retail provider, the electricity importer is that retail provider;

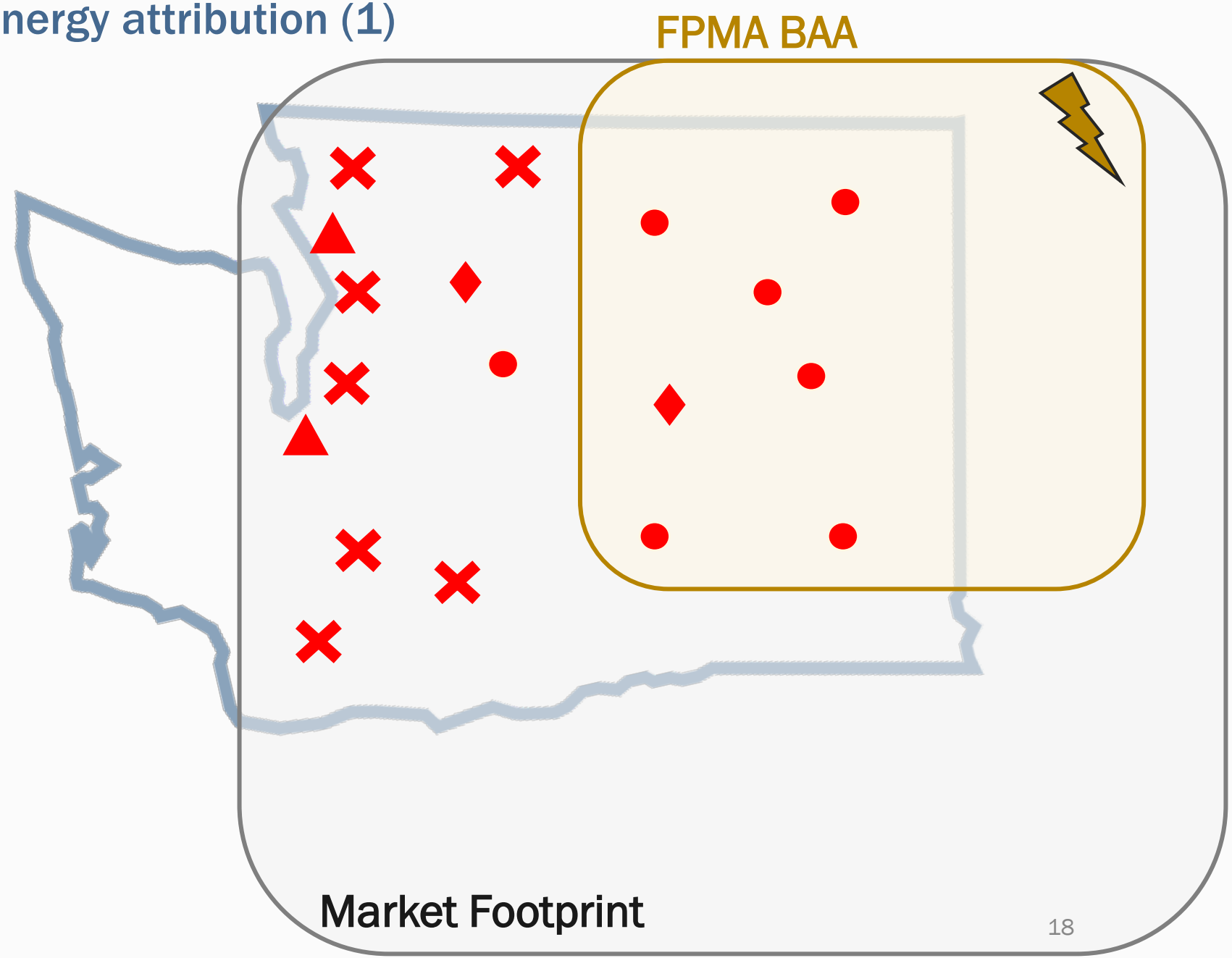
(b) Where the imported electricity is not contracted to a Washington retail provider, the electricity importer is the retail provider that receives a pro rata attribution of electricity; and

(c) The imported electricity under this subsection (f)(xx) is considered to be a specified source of electricity provided by the federal power marketing administration.

ECY understanding of FPMA energy attribution (1)

Load within WA GHG Zone of market footprint

- Preference customer: load-following contract with FPMA
- Preference customer: Block/slice contract with FPMA
- Other customer: Contract with FPMA
- No contract with FPMA
- FPMA resource/system energy

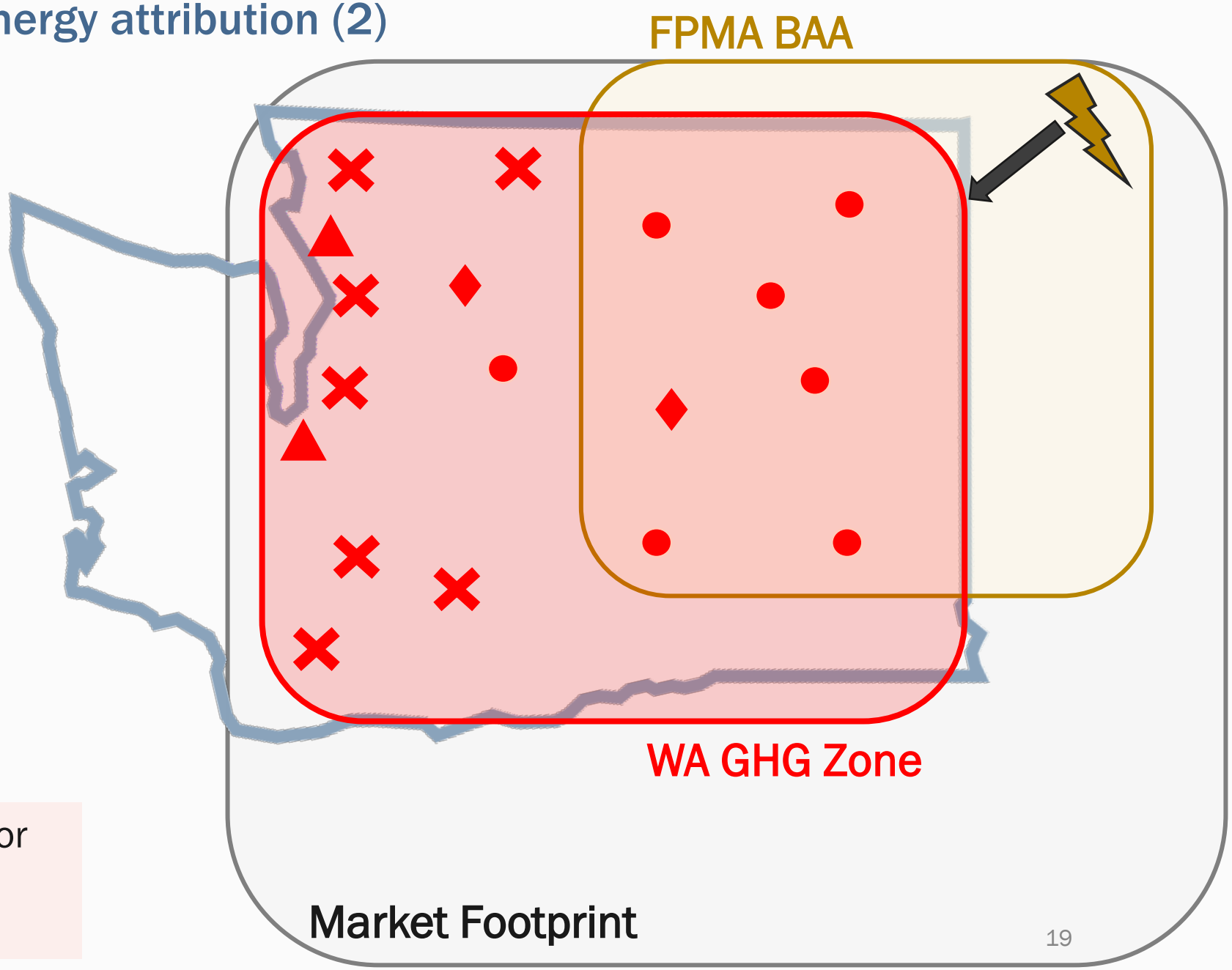


ECY understanding of FPMA energy attribution (2)

Load within WA GHG Zone of market footprint

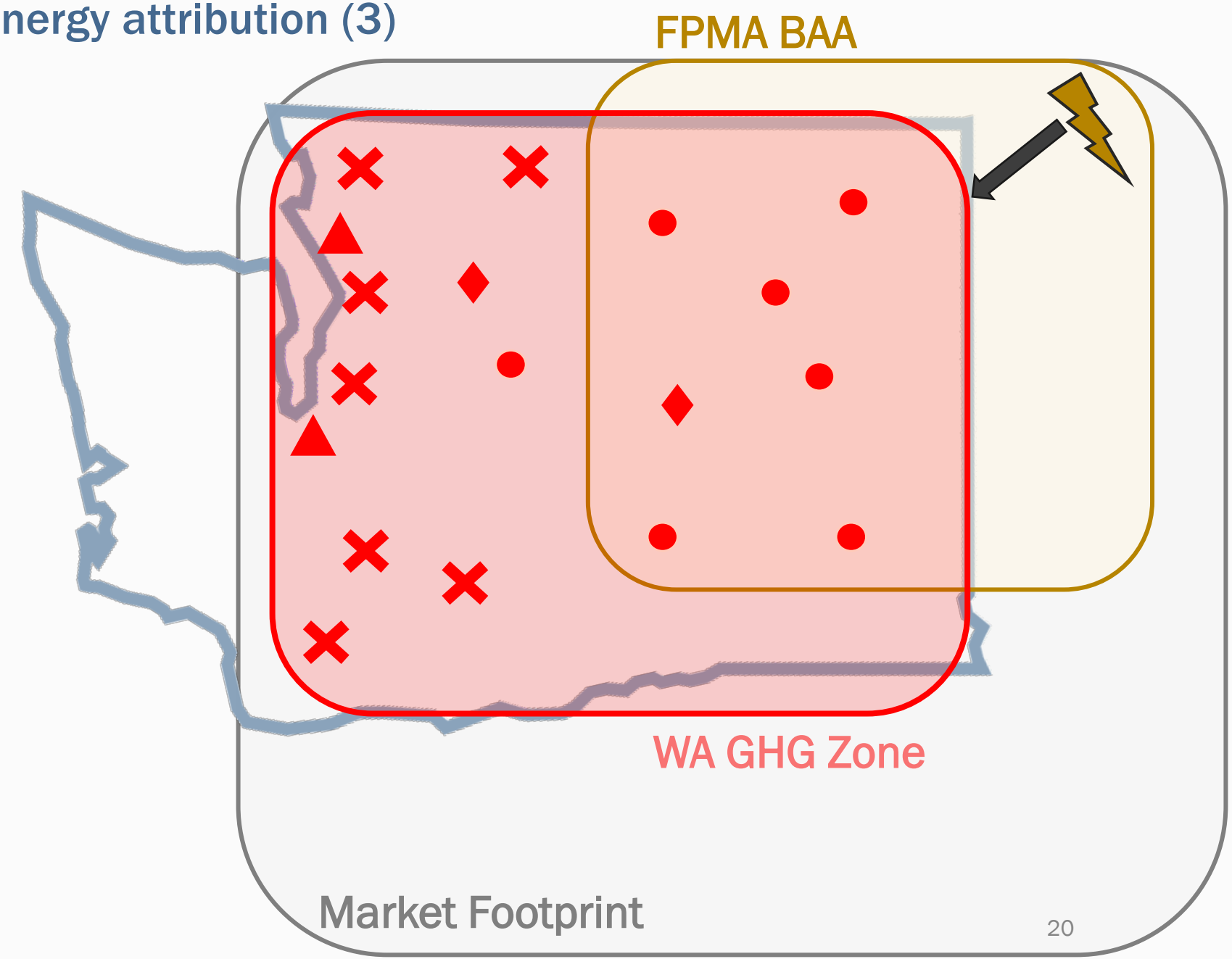
- Preference customer: load-following contract with FPMA
- Preference customer: Block/slice contract with FPMA
- Other customer: Contract with FPMA
- Other customer: No contract with FPMA
- FPMA resource/system energy

FPMA deemed market importer for FPMA resource/system energy attributed to WA GHG Zone.



ECY understanding of FPMA energy attribution (3)

- FPMA deemed market importer for FPMA resource/system energy attributed to WA GHG Zone.
- FPMA energy attributed by market operator to WA GHG Zone, not specific WA load or FPMA customers.
- Attribution of FPMA energy could support WA load without contracts with FPMA.
- Attribution of FPMA energy could support WA load with contracts with FPMA, but in excess of contracted energy.



Suggested concept: Backstop for FPMA deemed market importer (2)

Backstop electricity importer suggested by interested parties in Electricity Markets rulemaking (WAC 173-441-124(2)(f)):

(iii) For imported electricity assigned, designated, deemed, or attributed to Washington through a centralized electricity market, the electricity importer is the deemed market importer;

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(a) Where the imported electricity is contracted to a Washington retail provider, the electricity importer is that retail provider;

(b) Where the imported electricity is not contracted to a Washington retail provider, the electricity importer is the retail provider that receives a pro rata attribution of electricity; and

(c) The imported electricity under this subsection (f)(xx) is considered to be a specified source of electricity provided by the federal power marketing administration.

Requested feedback: Backstop for FPMA deemed market importer

For all questions consider FPMA participation in 1) only a real-time CEM (e.g., WEIM) and 2) a day-ahead to real-time CEM (e.g., M+). Requested feedback specifically from FPMA, WA retail providers, and representative organizations.

- Do you support or have concerns with the suggested backstop framework?
- How would attributed FPMA energy be identified as under (a) or (b) in the suggested framework?
- For either (a) or (b) how would specific volumes of attributed FPMA energy be associated with specific retail providers?
- For (b) is “the retail provider that receives a pro rata attribution of electricity” only retail providers with contracts with the FPMA or all retail providers within the WA GHG Zone?
- How would information be transmitted to applicable retail providers to support reporting and verification of imported energy under WAC 173-441? What documentation would be available to support third-party verification? (EPE reporting deadline: June 1; Verification deadline August 10)

Attributed FPMA energy: FPMA energy attributed by a market operator to the WA GHG Zone

Updates on “balancing energy” and “wheel-throughs” topics

- Ecology considering updates to imported electricity definitions, consistent with SB 6058
- Detailed discussion in Nov 2024 electricity workshop
- Ecology thanks interested parties for their substantive feedback

Balancing energy

- Ecology is no longer pursuing amendments to separately account for balancing energy provided to in-state generators
  - Removed proposed “balancing energy” provision in electricity importer definition in draft rules.
- Summary of feedback
  - Volume of unaccounted for “balancing energy” relatively small
  - Administratively complex accounting
  - Lack of consensus for point-of-regulation
  - Increasingly insignificant with participation in centralized electricity markets
- Changes in sector behavior or updated information may warrant future reconsideration by Ecology

Initial concept: Wheel-throughs

- Current draft rule adds definition: "Electricity wheeled through the state" means electricity that is generated outside the state of Washington and delivered into Washington with the final point of delivery outside Washington including, but not limited to, electricity wheeled through the state on a single NERC e-tag, or wheeled into and out of Washington at a common point or trading hub on the power system on separate e-tags within the same hour.
- Consistent with previous feedback, Ecology is also considering
  - Add definition (WAC 173-441-124): “Common Point” means, for purposes of identifying electricity wheeled through the state, any PORs and PODs within the same BAA located entirely in Washington.
  - Add provision (WAC 173-441-124) to clarify that identification of electricity “wheeled through the state on separate e-tags within the same hour” is only applicable to unspecified imports and unspecified exports.
  - If “wheel through” considerations in MJRP and ACS emission factor calculations can be aligned with the proposed implementation of electricity wheeled through the state on separate e-tags.

Requested feedback: Balancing energy and wheel-throughs

- Are there concerns with Ecology's decision to not pursue amendments to separately account for balancing energy provided to in-state generators?
- Are there concerns with Ecology's initial concept regarding wheel-throughs? Should additional definitions or clarifications be added in rule or guidance?

Topic: Reporting and CEMs timelines

WEIM “report-only” approach through CY2026

- Covered emissions under Cap-and-Invest determined by emissions reported under WAC 173-441, specifically WAC 173-441-124 for electricity importers.
- Electricity Markets rulemaking, adopted Dec 2024
  - Enabled attributed energy from a CEM to be treated as a specified import
  - Identified deemed market importer as responsible for emissions associated with energy attributed to WA
  - Maintained “report-only” approach for WEIM through calendar year (CY) 2026
- Summary of “report-only” approach (173-441-124(3)(v))
  - Maintains point-of-regulation for WEIM energy at utility or market participant that receives WEIM energy through 2026 (delays point-of-regulation shift to deemed market importer)
  - Requires reporting of WEIM MWhs.
  - Does not require reporting of emissions associated with WEIM MWhs. No covered emissions associated with WEIM energy through CY 2026.
  - Deemed-market importer point-of-regulation and compliance obligation for WEIM starts CY 2027
  - **Report-only provisions only applicable to WEIM, not EDAM or M+.**

Current CEMs timing and Ecology rule

- CAISO
  - EDAM launch spring 2026
  - CAISO implements GHG design for WA with spring 2026 launch. WEIM and EDAM enable attribution of non-WA resources to WA GHG zone.
- SPP
  - M+ launch 2027
- Current Ecology rule timing
  - Non-WA energy when attributed by a CEM, treated as imported electricity. Deemed market importer responsible for import. Delayed to 2027 only for EIM. Applies to EDAM and M+ once goes live.
  - Through CY 2026: EIM report-only approach. Energy associated with imports via EIM will not incur a compliance obligation.
- Incongruent Cap-and-Invest Program treatment of EIM and EDAM in CY2026 could have asymmetric market dispatch results

Options for WEIM/EDAM treatment in CY 2026

- Option A: ECY pursues emergency rulemaking to remove exemption for WEIM power for CY 2026. CAISO implements GHG design for WA for CY 2026. Attribution of power in WEIM/EDAM incurs compliance obligation for CY 2026.
- Option B: ECY pursues emergency rulemaking to add exemption for EDAM power for CY 2026. CAISO does not implement GHG design for WA for CY 2026. No attribution of power in WEIM/EDAM results in no compliance obligations incurred for CY 2026.
- Option C: No emergency rulemaking, but ECY provides guidance to CAISO to not implement GHG design for WA for CY 2026, instead beginning GHG design for WA with CY 2027. No attribution of power in WEIM or EDAM results in no compliance obligations incurred for CY 2026.
- Option D: No action by ECY. CAISO attempts to implement WEIM and EDAM consistent with current rule. Potential disparate treatment of WA under EDAM versus WEIM market operations.

Requested feedback: Aligning treatment of EIM/EDAM

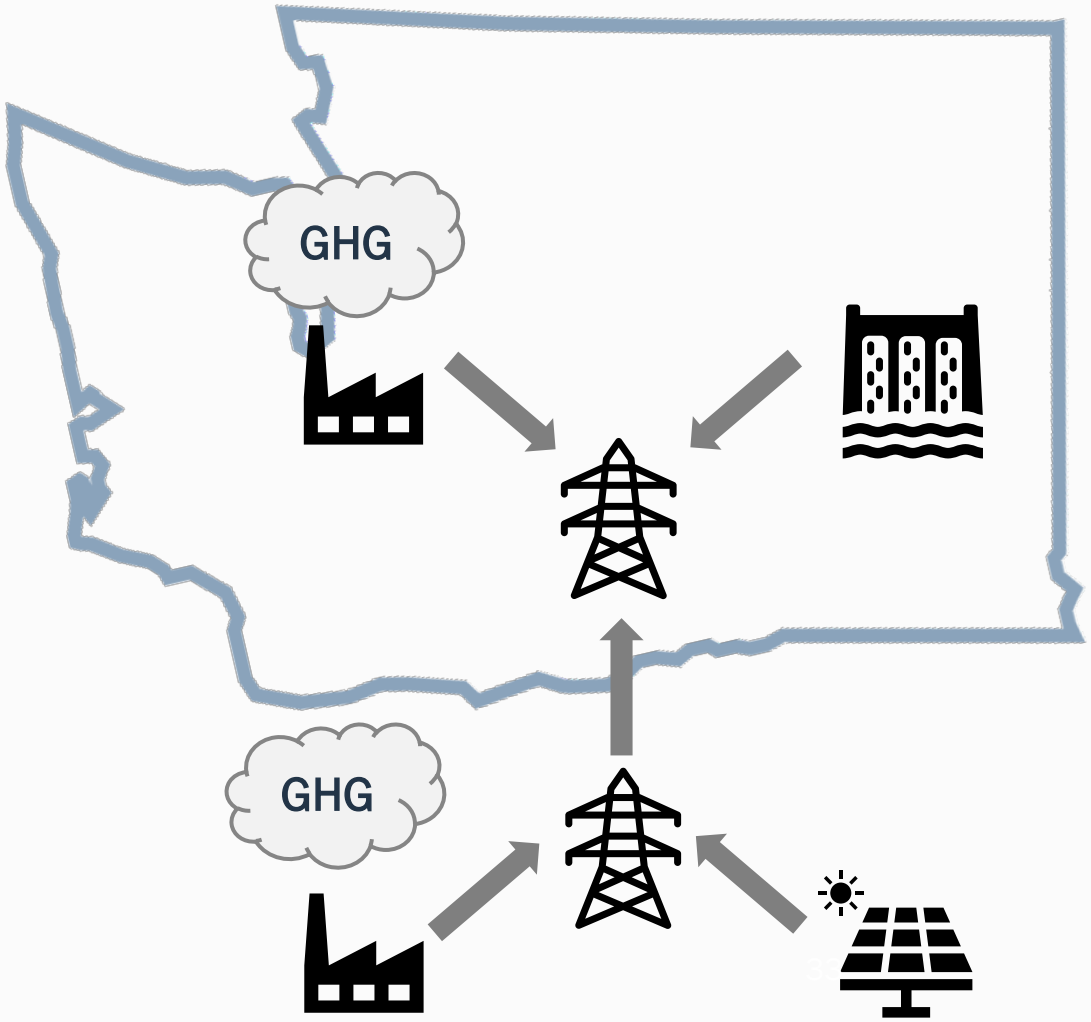
- What option should Ecology pursue for WEIM/EDAM for CY 2026?
- Are there significant concerns with any of the options?
- Are all options (A-D) feasible for CAISO to implement?
- What are potential market outcomes of option D?
- If option B or C is pursued, to protect the environmental integrity of the Cap-and-Invest Program, how could/should Ecology alternatively account for emissions associated with out-of-state EDAM energy serving WA?

Topic: Emissions Leakage

Electricity coverage under Cap-and-Invest (2)

CCA directs Cap-and-Invest Program to cover both:

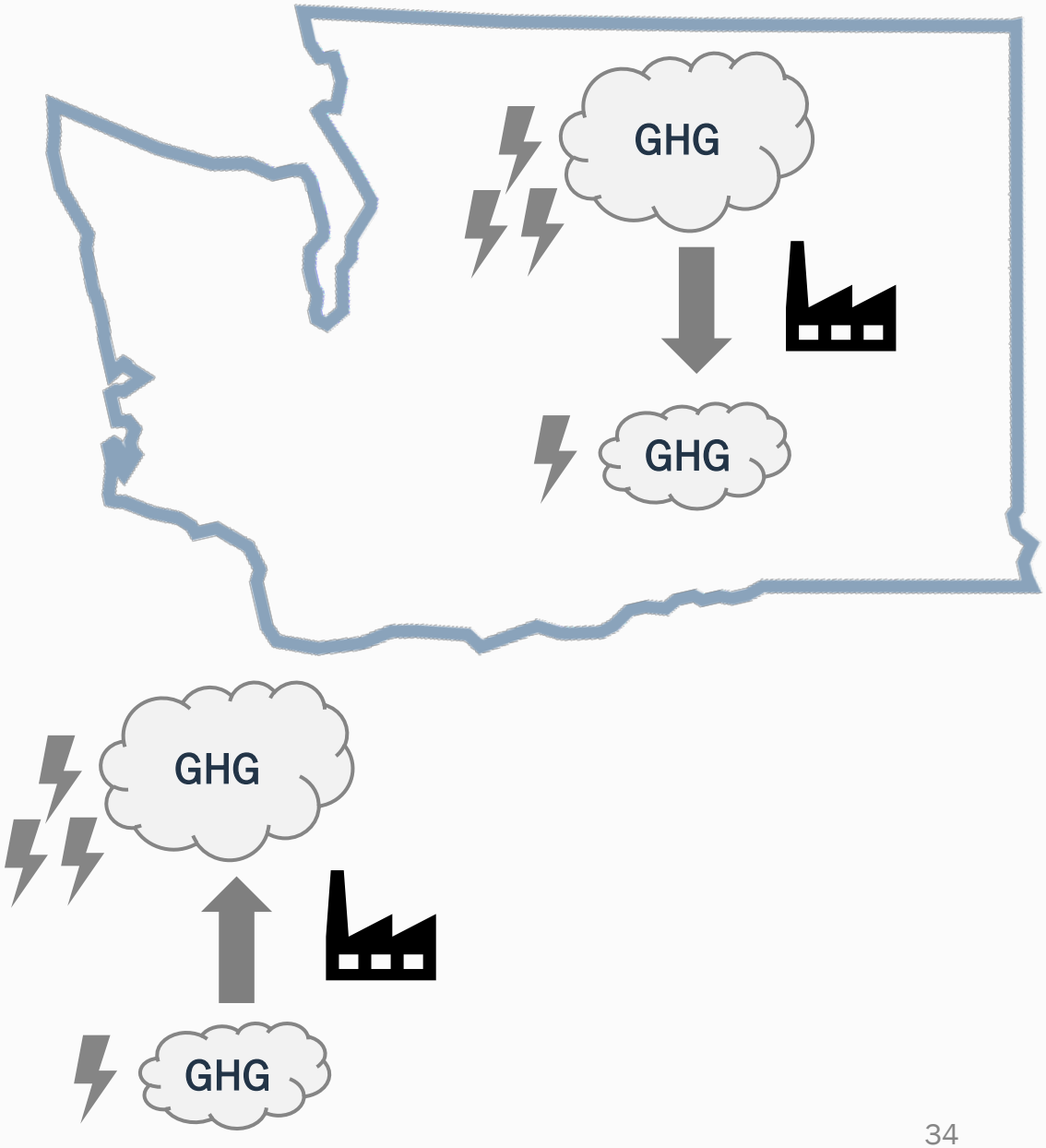
- In-state electricity generation
  - Facilities within WA state borders
- Imported electricity into WA
  - Electricity generated outside the state of Washington with a final point of delivery within the state



Limits emissions leakage by promoting consistent incentives for all generation serving Washington load.

Emissions leakage

- Reduction in GHG emissions within WA offset by a directly attributable increase in GHG emissions outside WA (or a linked jurisdiction)



50 MW attributed from Res 3 from BAA B to GHG Area / BAA A

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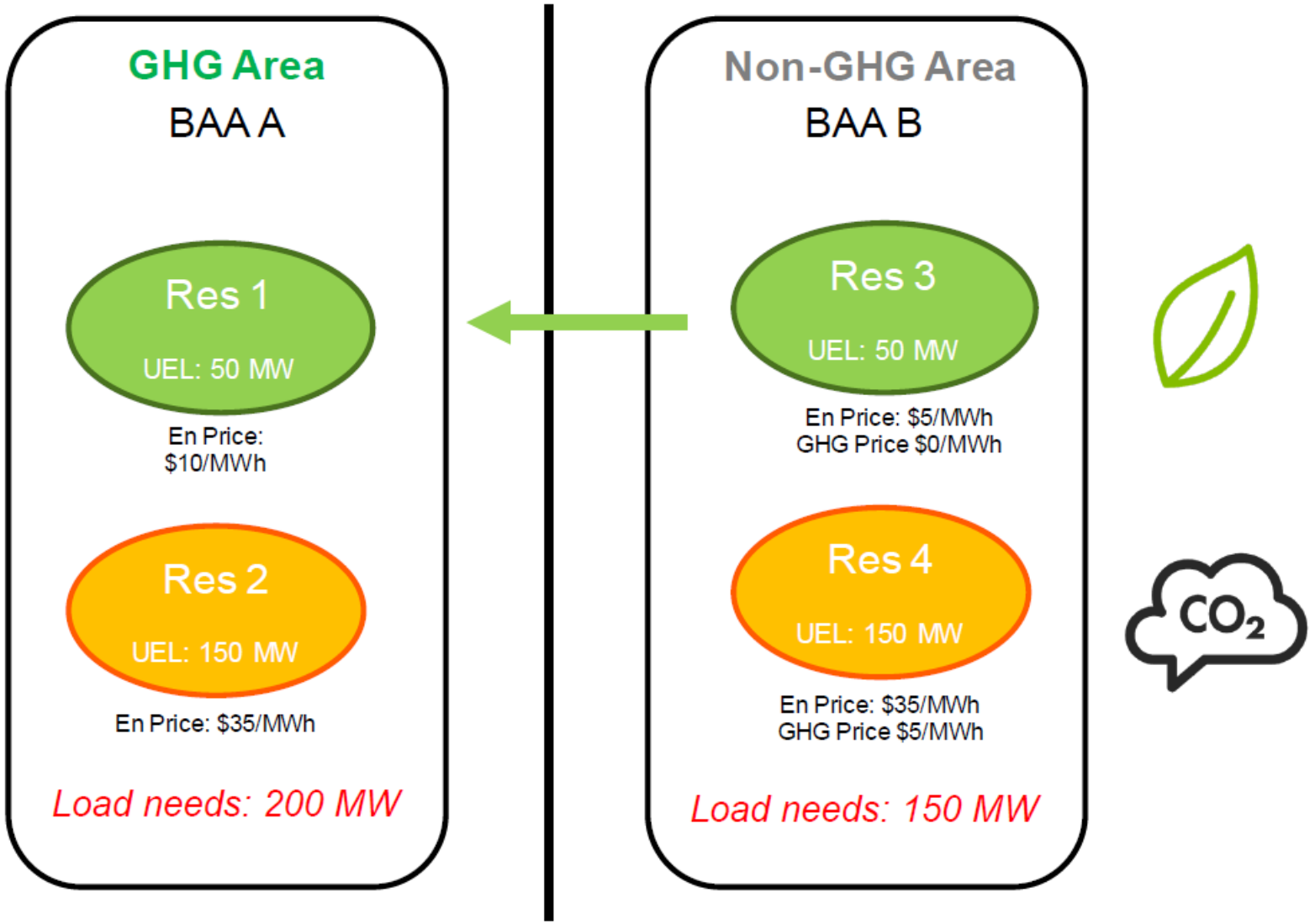

As 50 MW is attributed from Res 3 in BAA B to serve to serve the GHG Area, 50 MW is incremented from Res 4 to serve the non-GHG area resulting in secondary dispatch

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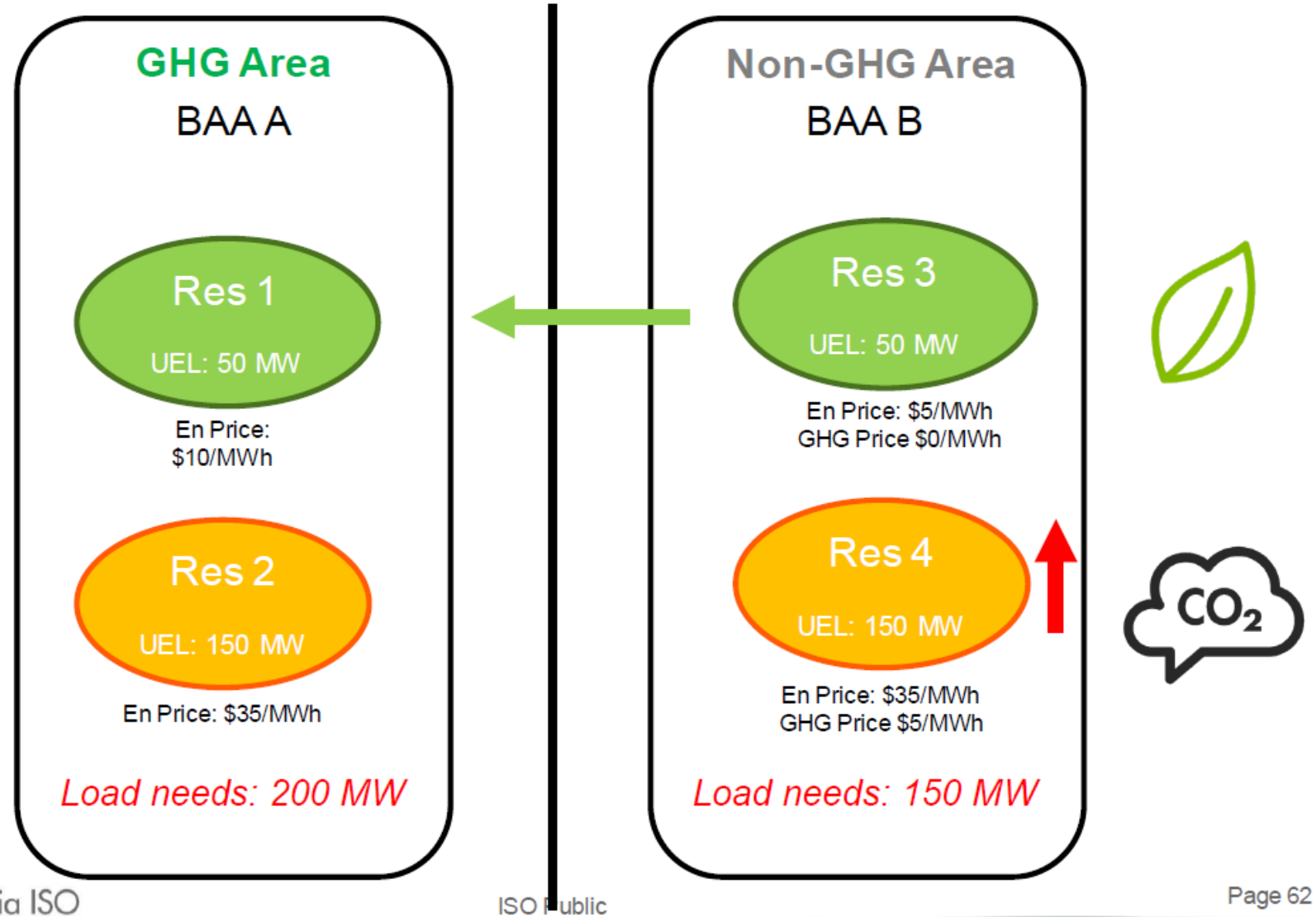


Determination of emissions leakage complex

- Consider what would have occurred absent Cap-and-Invest
- Difficult to determine appropriate “baseline” for comparison and causes of deviations
- Centralized electricity markets optimize for market footprint given all load, resources, and constraints
  - Economic dispatch of resources market-wide can result in greater or lesser dispatch than relative to a “baseline”, even without consideration of GHG-pricing programs
  - Changes in load can result in deviations from “baseline” dispatch based on load forecasts
  - Resources “backfilling” capacity attributed to a GHG zone may be lower-GHG or higher-GHG than attributed resource
- Different CEMs have distinct constraints on attribution to GHG Zones
  - EIM/EDAM: constraints developed to limit “secondary dispatch”
  - M+: constraints developed to limit “re-designation”

WEIM & EDAM: Overview of mechanisms to limit secondary dispatch

- Counterfactual
  - Assessment of resource generation, without attribution to a GHG regulation area
- Resource specific attribution constraints
  - GHG attribution limited to the lower of: (1) GHG bid capacity, (2) positive difference between the upper economic limit and the counterfactual (3) optimized energy schedule.
- BAA level GHG net transfer constraint
  - Limits attribution to not occur when a BAA is a net importer
  - Limits total attribution to not exceed the BAA's optimized net transfer
  - Excludes committed capacity or transfers used in resource sufficiency evaluations
  - Does not apply when a BAA overlapping the GHG-area does not pass resource sufficiency evaluations

WEIM & EDAM: Design comparison

Attribute	WEIM-only Entities Today and with EDAM Go-Live	EDAM Entities
Counterfactual	Base Schedules	Day Ahead= GHG Reference Pass Real Time= DAM Energy Award – DAM GHG Award
Committed Capacity	WEIM entities may include contracts in base transfers	Removed from GHG Reference Pass in DA so that it can be attributed
Attribution Constraints	The GHG attribution is limited to the lower of: (1) the GHG bid capacity, (2) the positive difference between the upper economic limit and the counterfactual (3) the optimal energy schedule.	
Eligible for Attribution	Upper Economic Limit (UEL) – Counterfactual	
Secondary Dispatch	Secondary Dispatch = (0, GHG award - max(0, energy award - counterfactual))	

Table from CAISO May 29, 2024 presentation

EDAM GHG Reference Pass

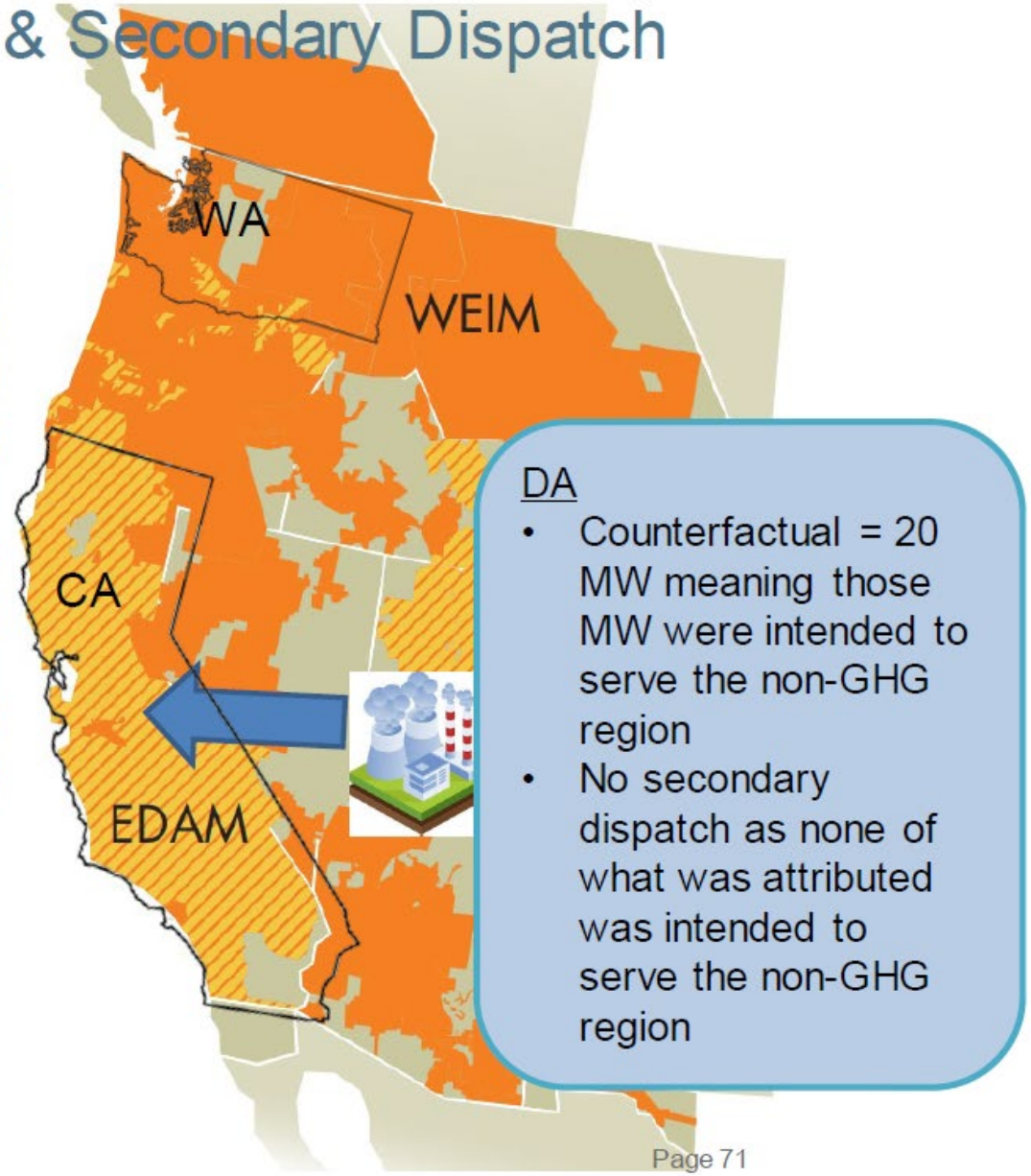
- GHG Reference Pass determines what would have been the optimized solution if GHG regulation areas were not in the market footprint.
- Runs before actual day-ahead market run (Integrated Forward Market)
- Divides market footprint into GHG regulation area and non-GHG area.
- Determines optimized generation and BAA transfers
  - Without GHG bids
  - Without net import into GHG regulation area
  - Committed capacity to GHG regulation area not available to non-GHG area
  - Net export from GHG regulation area allowed
- Output generation schedule used as day-ahead counterfactual

EDAM Committed Capacity

- Allows market participants to identify generation contracted to serve customers in a GHG regulation area
- Committed capacity is excluded from the GHG Reference Pass
- Enables contracted capacity, when identified as committed capacity, to be available for attribution to the GHG regulation area if its bid is economic

Counterfactual in EDAM & Secondary Dispatch Day Ahead

EDAM Entity DA	MW
Energy Bid	100
GHG Bid	100
UEL	100
Counterfactual	20
Eligible for Attribution	100-20= 80
Energy Award	80
DA GHG Award / Attribution	40
Secondary Dispatch	0



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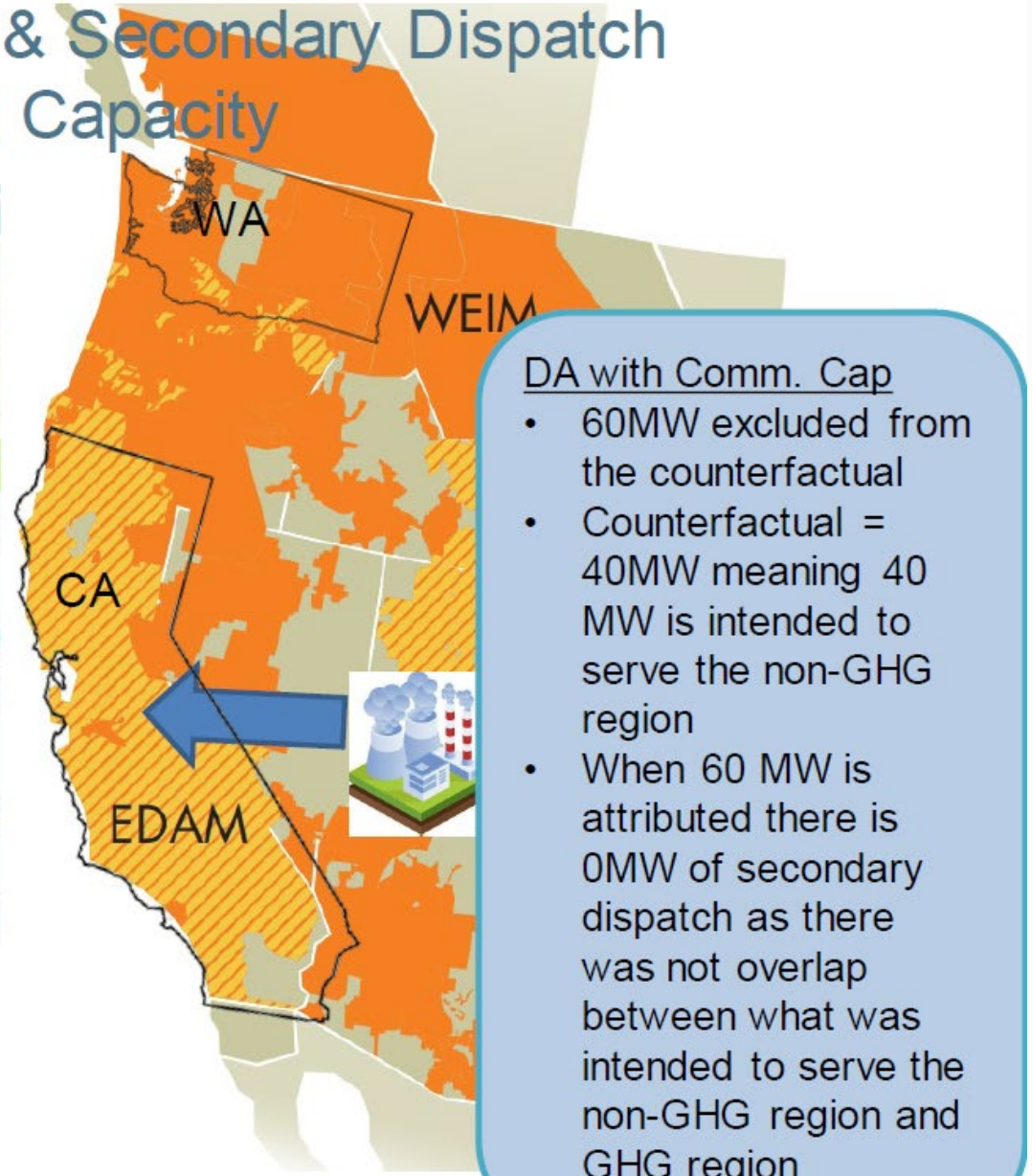
Counterfactual in EDAM & Secondary Dispatch Day Ahead w/Committed Capacity

EDAM Entity DA	MW
Energy Bid	100
GHG Bid	100
UEL	100
Committed Capacity	60
Counterfactual	40
Eligible for Attribution	100-40=60
Energy Award	100
GHG Award / Attribution	60
Secondary Dispatch	0



DA with Comm. Cap

- 60MW excluded from the counterfactual
- Counterfactual = 40MW meaning 40 MW is intended to serve the non-GHG region
- When 60 MW is attributed there is 0MW of secondary dispatch as there was not overlap between what was intended to serve the non-GHG region and GHG region

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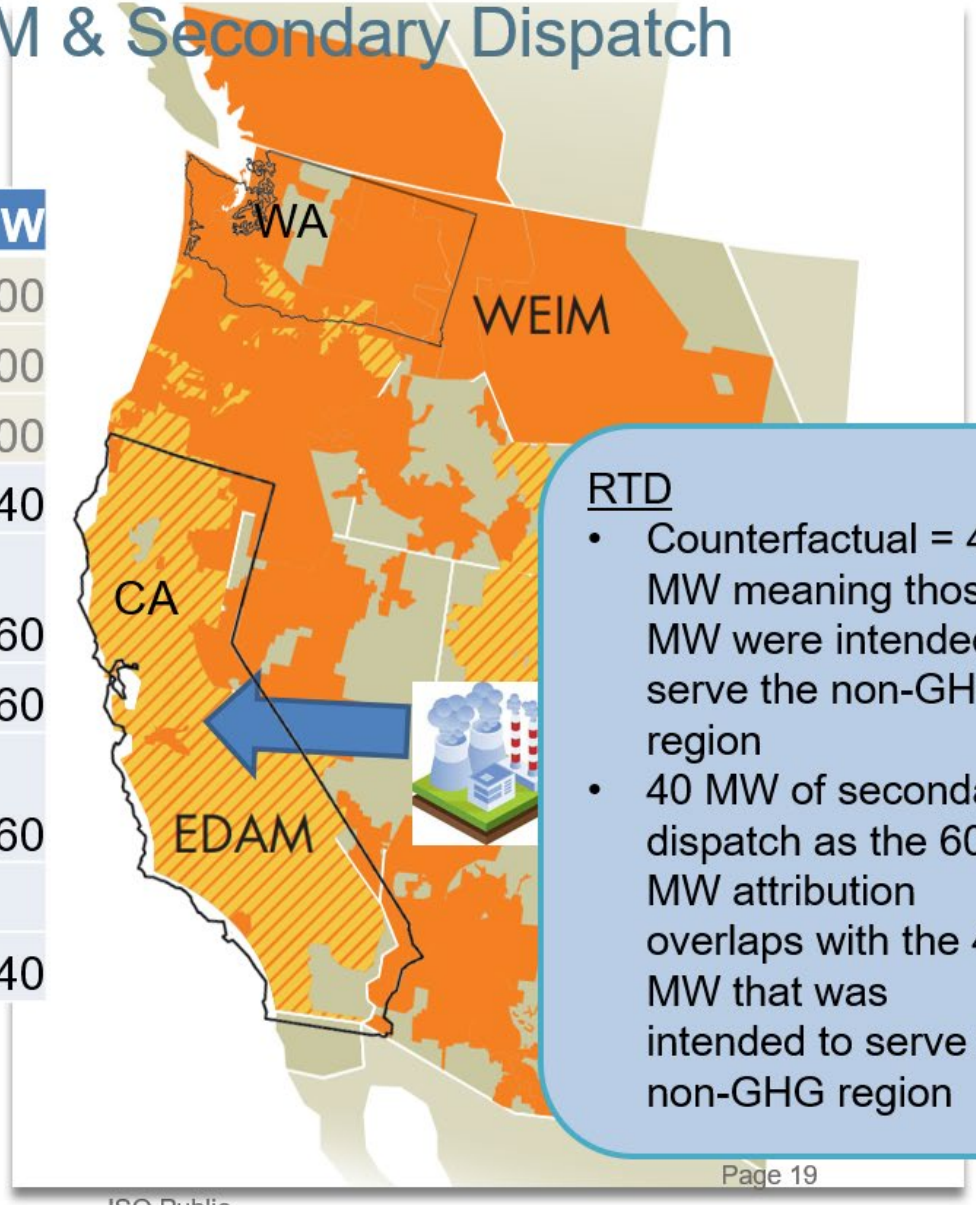
Counterfactual in EDAM & Secondary Dispatch Real Time

EDAM Entity RTD	MW
Energy Bid	100
GHG Bid	100
UEL	100
Counterfactual	40
Eligible for Attribution	100-40= 60
Energy Award	60
GHG Award / Attribution	60
Secondary Dispatch	40



Example provided by CAISO June 2025

CAISO resources

Select CAISO resources with discussion of GHG attribution constraints in EIM and EDAM

- Final proposal
- Sep 19 2024 presentation slides 34-38
- May 29 2024 presentation slides 105-130
- EDAM transmittal letter
- EDAM business practices manual draft coming soon
- Greenhouse gas coordination working group site

M+: Overview of mechanisms to mitigate re-designation

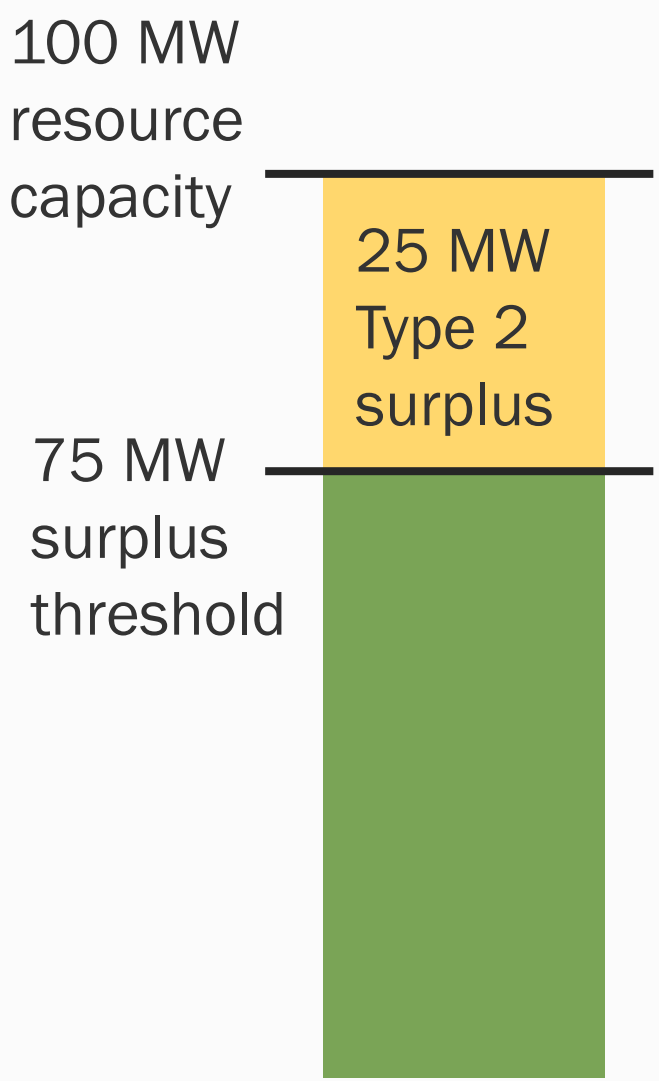
- Resource specific attribution constraints
  - Type 1A energy
    - Energy from an external specified source with a contract to serve a GHG Pricing Zone
    - Amount of Type 1A offer must be consistent with projected load from contract
    - Only available to be attributed to that GHG Pricing Zone
  - Type 1B energy
    - Energy from an external specified source with a contract to serve a GHG Pricing Zone
    - Amount of Type 1B offer not required to be consistent with projected load from contract
    - Available to be attributed to GHG Pricing Zone or outside a GHG Pricing Zone
  - Type 2 energy
    - Energy from an external specified source in excess of the resource's surplus threshold
    - Available to be attributed to a GHG Pricing Zone or outside a GHG Pricing Zone

M+: Specified source energy registration requirements

- Entities offering Type 1A energy must provide SPP with
  - Notification of contract to supply load in GHG Zone
  - Demonstration of transmission service or ability to obtain transmission service to load
  - Confirmation of maximum load served under the contract
  - Type 1A energy offers must not exceed projected load to which Type 1A energy is contracted (within uncertainty margin amount)
  - Validated with load serving entity upon submission
- Entities offering Type 1B energy must provide SPP with
  - Notification of a contract to supply load in a GHG Zone
- Entities offering Type 2 energy are not required to submit documentation with respect to a GHG Zone

M+: Type 2 and surplus

- "Type 2 Energy is Energy from a Specified Source Resource that exceeds the Specified Source Resource's Surplus Threshold, meaning a quantity of Energy that must be surpassed before that Energy is available to serve load within a GHG Pricing Zone."
- Surplus amount available for attribution to the GHG Zone in the market optimization
- Identification of surplus threshold for each resource
  - Submitted by market participant (MP) OR
  - Identified by market operator using merit order process
- Two-part optimization implemented for Type 2 surplus



M+: Options for identification of surplus threshold

- Resource surplus threshold **submitted by MP**
  - No current restriction in M+ on surplus threshold when submitted
  - SPP has indicated Ecology may further define surplus for WA GHG Zone
- Resource surplus threshold **determined by market operator using merit order process**
  - Determined at the MP level. MPs likely to have smaller footprint than BAA level.
  - Economically stacks energy available to serve a MP's load obligation.
  - If available capacity exceeds MP's load obligation, then surplus threshold identified

M+: Merit order process example

Merit order process

- Economically stacks energy available to serve a MP's load obligation.
- If available capacity exceeds MP's load obligation, then surplus threshold identified

Example

- MP load obligations: 900 MW
- MP total capacity: 1200 MW
- R1 & R2: no surplus identified
- R3: 100 MW surplus, 400 MW surplus threshold
- R4: 200 MW surplus, 0 MW surplus threshold

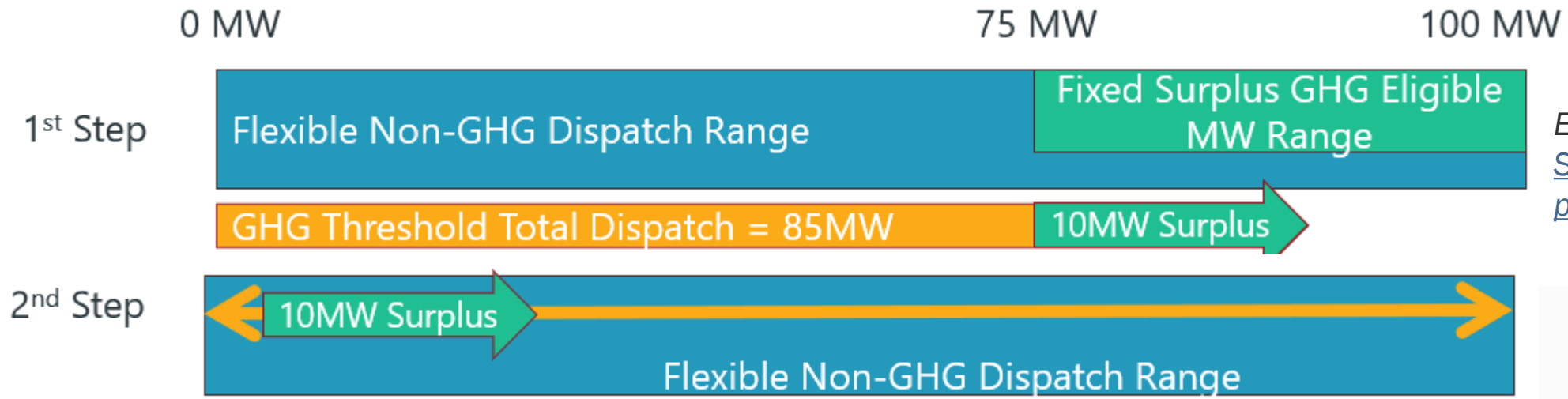
Exhibit 5-1 – Merit Order Example with no Submitted Surplus Threshold

Resource	Incr MW	Cost ($/MWh)	Cumulative MW	Surplus MW	Surplus Threhold MW
R4	75	$55	1,200	75	0
R4	50	$50	1,125	50	0
R4	75	$45	1,075	75	0
R3	100	$42	1,000	100	400
R3	150	$35	900	0	0
R2	100	$35	750	0	0
R3	150	$34	650	0	0
R1	75	$30	500	0	0
R2	100	$27	425	0	0
R2	100	$25	325	0	0
R1	75	$24	225	0	0
R1	50	$20	150	0	0
R3	100	Self	100	0	0
Total	1200			300	

Table from M+ GHG Protocols

M+: Two-part optimization to determine attribution of Type 2 energy

- Initial optimization
  - Applies MP/merit order surplus amounts and thresholds to determine anticipated attribution of Type 2 energy to the GHG Zone
- Second optimization run
  - Surplus amount available for attribution is anticipated attribution from initial run
  - No surplus threshold constraint



Example from SPP [Sep 12, 2023 presentation]

M+: Unspecified imports from CEMs

- WEIM and EDAM: All attribution of non-GHG zone generation to GHG zone will be resource-specific.
- M+: Will enable resource-specific and unspecified attribution of non-GHG zone generation to the GHG zone.
- Unspecified Source Imports under M+
  - Unspecified source imports are not assigned to any specific resource or group of resources.
  - Market optimization economically attributes unspecified source imports to the GHG zone.
  - Unspecified source imports compete with other resources, such as internal GHG zone resources and specified source imports, for attribution to GHG zone load.
  - Optimization applies the Unspecified GHG Adder to all unspecified source imports into the GHG zone.
  - Unspecified GHG adder uses an emission factor set according to a method established by the GHG pricing regulation.

SPP resources

Select SPP resources with discussion of GHG attribution constraints in M+

- M+ GHG Protocols (section 5, 9.3)
- Sep 20 2024 FERC Deficiency Response
- Sep 12 2023 Presentation
- Oct 31 2024 Presentation
- M+ GHG Task Force site

Initial discussion of M+ mechanisms

Mechanism	Summary	Initial assessment of leakage risk	Comparable to EIM/EDAM
Type 1A	Offer of supply volume contracted to GHG zone	High mitigation of market leakage risk.	Similar to “committed capacity”, except Type 1A always attributed to GHG zone.
Type 1B	Resource with a contract to GHG zone. Offer volume at discretion of MP	Low/highly variable mitigation of market leakage risk.	
Type 2/surplus threshold (resource operator)	Identified capacity available to serve WA at discretion of MP	Low/highly variable mitigation of market leakage risk. Ecology direction on “surplus” may increase mitigation.	Similar to WEIM-only counterfactual (base schedule), except M+ applicable to day-ahead and real-time functions
Type 2/surplus threshold (merit order)	Calculated capacity available to serve WA evaluated against “baseline” load	High mitigation of market leakage risk.	Similar to EDAM day-ahead counterfactual (GHG Reference Pass), except merit order process considers “baseline” load at MP and not non-GHG zone level.
2-part surplus optimization	See slide 55	Uncertain impact. Surplus threshold method and MP discretion likely controls significance of Type 2 leakage risk.	
Unspecified Imports	Unspecified attribution of non-GHG zone generation	Highly variable risk of leakage. Likely highly dependent on unsp. EF to be specified by ECY.	

Initial discussion of WEIM/EDAM mechanisms

Mechanism	Summary	Initial assessment of leakage risk	Comparable to M+
Committed capacity	Identification of supply volume contracted to GHG zone, reserved from attribution constraints	High mitigation of market leakage risk.	Similar to "Type 1A", except committed capacity may be attributed to GHG-zone or non-GHG zone.
Counterfactual resource specific attribution constraint (EDAM entities)	Calculated capacity available to serve WA evaluated against "baseline" load	Medium/high mitigation of market leakage risk. Gross GHG attribution limit provides additive mitigation.	Similar to M+ merit-order process, except EDAM counterfactual considers "baseline" load at non-GHG zone level not MP level.
Counterfactual resource specific attribution constraint (WEIM-only entities)	Identified capacity available to serve WA at discretion of MP	Low/highly variable mitigation of market leakage risk. Gross GHG attribution limit provides additive mitigation.	Similar to M+ resource operator surplus threshold, except WEIM-only applicable to real-time functions only
GHG net transfer constraint	Limits aggregate BAA attribution, to the BAA's net transfers	Medium/high mitigation of market leakage risk. Counterfactual constraint provides additive mitigation.	
Identification of "secondary dispatch"	Volume of attribution identified as "secondary dispatch"	Could enable ECY to identify volume of attributed energy with higher risk of emissions leakage.	

Initial assessment of leakage risk based only on mechanics of market GHG design. Emissions leakage risk will be dependent on overall market dynamics including the market footprint, general market design, and market GHG-specific design.

Potential mechanisms to minimize risk of emissions leakage

- Define “surplus” to support implementation in CEMs
- Out-of-market approach to account for risk of emissions leakage
  - CARB approach: EIM Outstanding Emissions and EIM Purchaser

CARB: EIM Outstanding Emission Calculation (MRR §95111(h)(1))

Current Outstanding Emissions (OE) = **Total California EIM Emissions** – Deemed Delivered EIM Emissions

Total California EIM Emissions = Reported EIM MWh × $EF_{unspecified}$ × Transmission loss factor (TLF)

Potential change: Revise **Total California EIM Emissions**

- EDAM: Reported MWh limited to annual generation attributed below the difference between the Day Ahead (DA) energy schedule and DA GHG award

$$CO_{2eEDAM} = MWh_{below(DA\ energy\ schedule\ -\ DA\ GHG\ award)} \times EF_{unsp} \times TLF$$

- WEIM only: Reported MWh limited to the annual generation attributed below the base schedule

$$CO2_{eWEIM} = MWh_{below\ base\ schedule} \times EF_{unsp} \times TLF$$

Copied from Slide 22 CARB Oct 5 2023 afternoon workshop

CARB: EIM Purchaser Requirements

- EIM Purchaser requirements place the responsibility for EIM Outstanding Emissions on entities purchasing WEIM electricity
- EIM Purchasers are California utilities that receive freely allocated allowances and purchase WEIM electricity to serve California load
- Out-of-state WEIM load and generation do not incur obligations for WEIM Outstanding Emissions
- EIM Purchasers collectively address Outstanding Emissions through the direct retirement of a portion of freely allocated allowances
- Outstanding Emissions are apportioned to EIM Purchasers on retail sales share basis
- Ensures the environmental integrity of the Cap-and-Trade Program

Copied from Slide 18 CARB Oct 5 2023 afternoon workshop

Potential mechanisms to minimize risk of emissions leakage continued

- Define “surplus” to support implementation in CEMs
- Out-of-market approach to account for risk of emissions leakage
  - CARB approach: EIM Outstanding Emissions and EIM Purchaser
    - Current EIM Outstanding Emissions dependent on total MWh deemed/attributed to CA under WEIM
    - EIM Purchaser requirements place the responsibility for EIM Outstanding Emissions on entities purchasing WEIM electricity
    - Outstanding Emissions alternative, discussed October 2023, dependent on only MWh identified as “secondary dispatch”

Requested Feedback: Surplus and emissions leakage

- Do you have support, concerns, or comment on Ecology's initial assessment of leakage risk and mitigation associated with each market's GHG design?
- What other market elements, outside of those discussed, increase or decrease the risk of emissions leakage?
- Should Ecology pursue additional mechanisms to minimize emissions leakage risk, including but not limited to defining "surplus" or implementing an out-of-market accounting approach?
- Should Ecology adopt a definition of "surplus" that minimizes emissions leakage risk and is cohesive across distinct market designs, or should a definition of "surplus" be developed to best address leakage risk given a specific market design?
- What rule or guidance should Ecology adopt regarding "surplus" or "surplus thresholds"? When is adoption of rule or guidance necessary for market implementation and MP preparation?
- Should Ecology adopt an out-of-market accounting approach to account for CEM emissions leakage, such as CARB's existing Outstanding Emissions and EIM purchaser framework or the alternative Outstanding Emissions calculation discussed October 2023?
- Where identified capacity is available to serve WA at discretion of a MP (Type 2 resource operator, WEIM-only counterfactual) are there other market or economic elements not considered that limit emissions leakage risk?
- Should Ecology address leakage risk associated with a resource identified as having a contract for load within WA, but where no other constraint is applied to the resource offer? In such a case are there other market or economic elements not considered that limit emissions leakage risk?

Topic: WA Greenhouse Gas Zone and imported electricity framework

Greenhouse Gas Zone within a CEM

- GHG Zone: Identified load and resources within a CEM subject to GHG pricing regulation. Also known as “GHG Pricing Zone” or “GHG Regulation Area”.
- CA GHG Zone currently implemented in WEIM, reflecting CA Cap-and-Trade Program.
- Discussion of “defining WA” under existing imported electricity framework and CEMs: March 6, 2025 workshop; Submitted comment

Summary of comment: Defining WA GHG Zone

- All generation resources physically located inside Washington, excluding resources associated with a federal system, should be within a CEM WA GHG Zone
  - Consistent with existing imported electricity framework
  - Includes resources located within a) BAAs located entirely within WA and b) multi-state BAAs
  - Includes non-federal resources located within a FPMA BAA
- FPMA generation system, including resources physically located inside WA, should not be within WA GHG Zone
  - Consistent with existing imported electricity framework
- All load in BAAs located entirely within WA should be within WA GHG Zone
  - Consistent with existing imported electricity framework
- All load from WA utilities in a FPMA BAA should be within WA GHG Zone
  - Consistent with existing imported electricity framework
  - ECY assumes commenters also support other potential WA load in a FPMA (e.g., direct industrial customers) these within WA GHG Zone
- WA retail load of multi-jurisdicational retail provider (MJRP) should not be within WA GHG Zone
  - **Not consistent with existing imported electricity framework**

Imported electricity and defining WA load: Existing rule and statute

- "Imported electricity" means electricity generated outside WA with a final point of delivery within the state (RCW 70A.65.010(42), WAC 173-441-124(2)(q)).
- Any imported electricity under existing rule and statute, by definition, is associated with a delivery to a location or load **within WA**.
  - There are load and delivery points in multi-state BAAs (MJRP BAAs, FPMA BAA) defined as **within WA.**
  - Otherwise, no electricity delivered within a multi-state BAA would be considered “imported electricity” and would not require reporting under WAC 173-441-124.
- Reporting of imported electricity supplied from multi-state generation systems to WA has specific reporting structures and provisions.

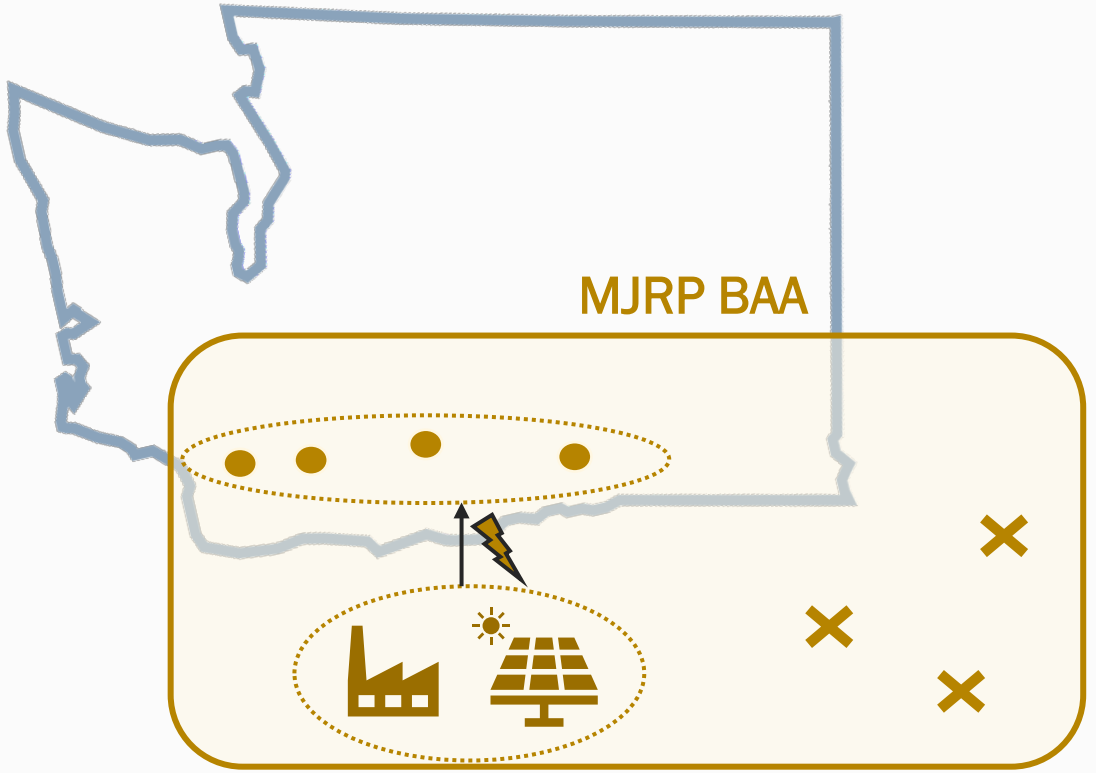
WA load in multi-state BAAs or supplied by multi-state generation systems

Washington

- WA retail load of a multijurisdictional electric company
  - *For electricity from facilities allocated to serve **retail electricity customers of a multijurisdictional electric company,** the electricity importer is the multijurisdictional electric company (WAC 173-441-124(2)(f)(iv);*
- Designated scheduling points of WA load within a FPMA BAA
  - *For electricity that is imported into **the state to a designated scheduling point inside the balancing authority area of a federal power marketing administration**, the importer is the… (WAC 173-441-124(2)(f)(viii))*
- Public utilities, cooperatives and industrial entities located in WA that are customers of a FPMA
  - *For electricity that is imported into the state by a federal power marketing administration and sold to a **public body or cooperative customer or direct service industrial customer located in Washington state** pursuant…. (WAC 173-441-124(2)(f)(vi);*
- Non-retail load within a BAA of a multi-state jurisdictional retail provider
  - Responsible electricity importer not currently identified under 173-441-124.

Defining WA under imported electricity framework: Multi-state BAAs and retail providers

- Two multi-state BAAs also multi-jurisdictional retail providers within WA (Avista and PacifiCorp)
- Electricity provided from an MJRP system, other than from in-state facilities, is “imported electricity” (WAC 173-441-124(2)(q)(v)).
- MJRP must report WA retail load served by the MJRP system, other than from in-state facilities, as imported electricity (WAC 173-441-124(2)(q)(v), -124(3)(b)(iv))
- MJRP WA load served by imported system power and associated emissions are calculated based on system data. (WAC 173-441-124(3)(b)(iv))



WA retail load of MJRP (covered by CCA)

Non-WA MJRP load

Imported electricity from “not-WA” MJRP system (covered by CCA)

Imported system power: Reporting and emissions

- Electricity imports and emissions from FPMA system and MJRPs calculated from reported system supply and annually updated system emission factor
- System emission factors based on annually reported system generation and emissions from owned facilities and wholesale purchases and sales
- MJRP system EF used to report imported power supporting WA MJRP retail load (simplified)

  (Owned generation (excluding in-state facilities) + Wholesale purchases – Wholesale Sales) $MTCO_2e$ / (Owned generation (excluding in-state facilities) + Wholesale purchases – Wholesale Sales) MWh

- Wholesale adjustments primarily specified and unspecified bilateral transactions documented by e-tags

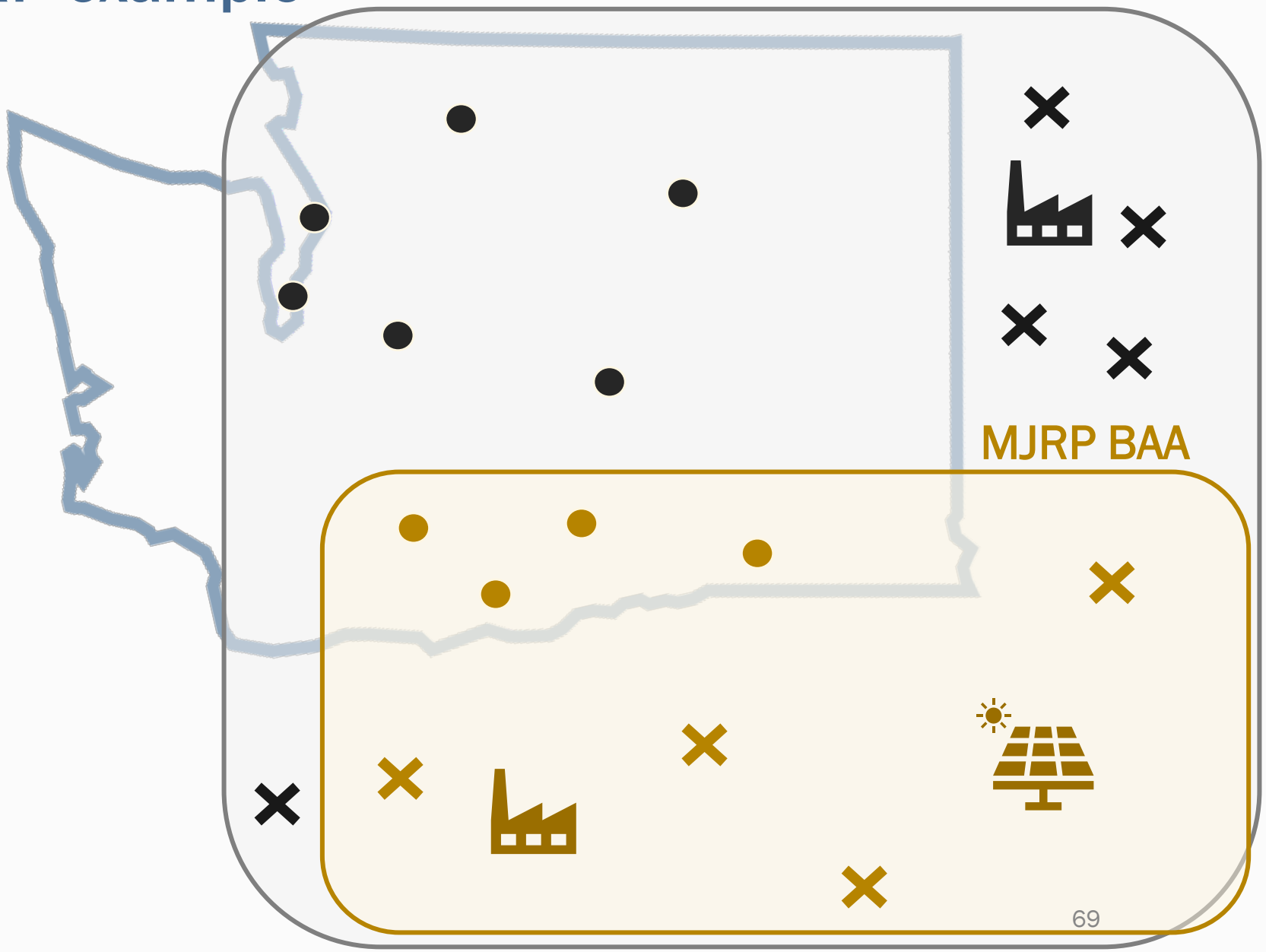
Simple market and MJRP example

Load within market footprint

- WA retail load of MJRP
- Other in-market WA load
- In-market load outside WA, within MJRP BAA
- In-market load outside WA, outside MJRP BAA

MJRP system resources located outside WA

Generation resource located outside WA

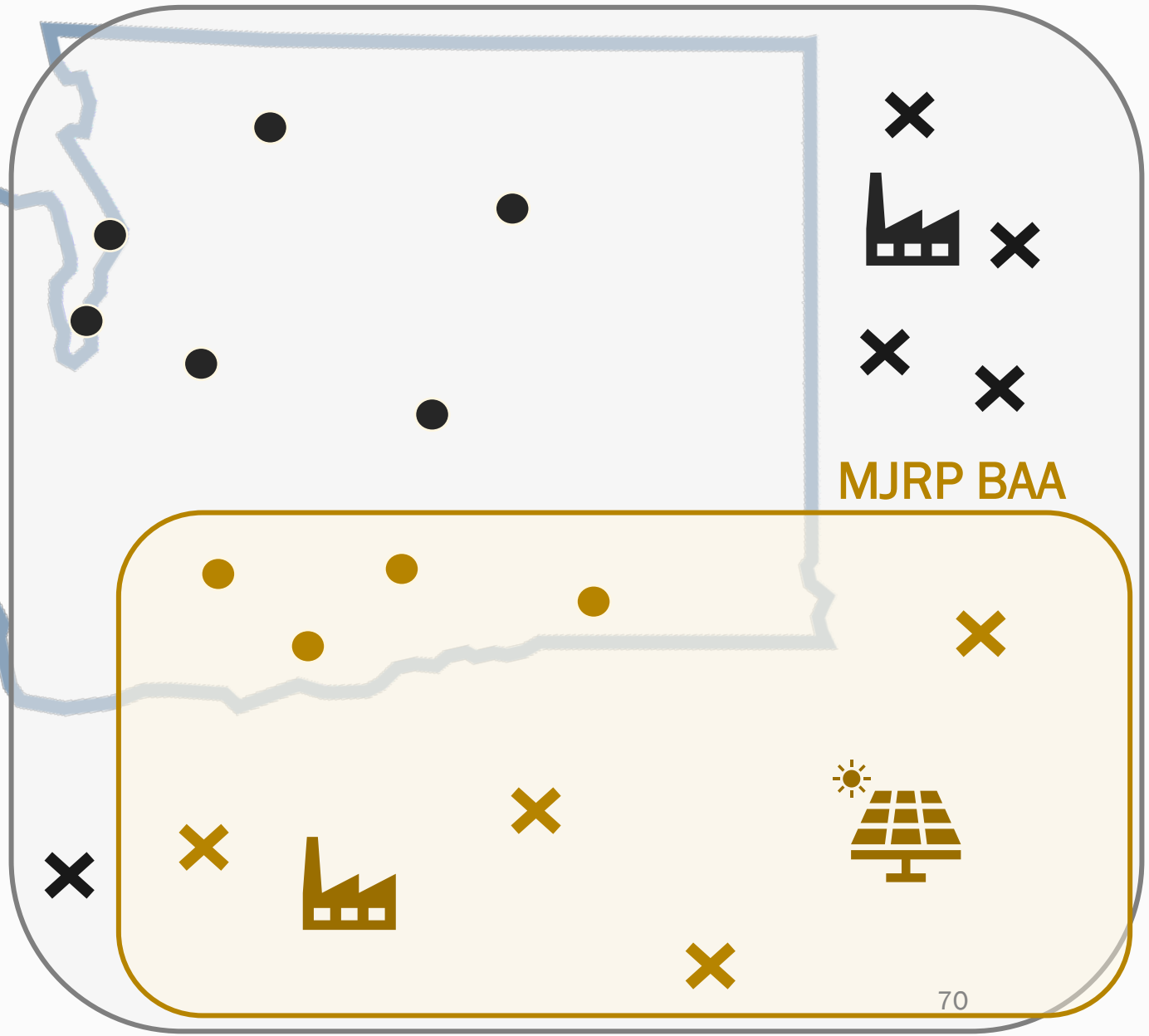


Simple CEM without GHG Zone

- Market commits resources to support market load as a whole including
  - Within MJRP BAA (MJRP retail load)
  - Outside MJRP BAA

Requested Feedback

- When participating in a CEM, how can/should the MJRP EF account for MJRP generation supporting market load that is not the MJRP's retail load? In a bilateral world, MJRP generation not supporting MJRP retail load would be identified as wholesale sales and subtracted from MJRP owned generation $MTCO_2e$ and MWh in MJRP EF calculation.

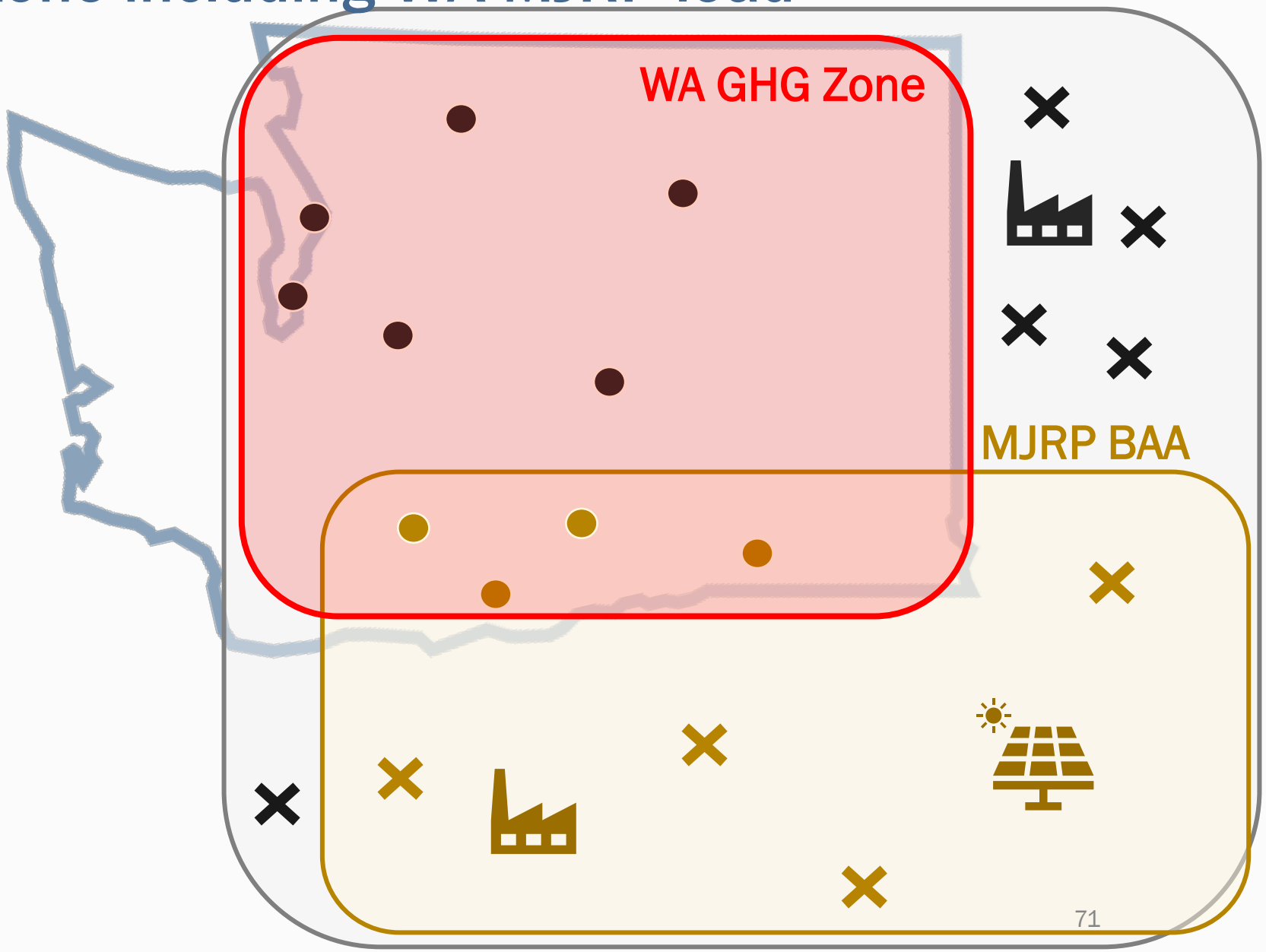


Simple CEM with GHG Zone including WA MJRP load

- Assume all out-of-state resources voluntarily offer into WA GHG Zone; GHG bids reflect resource EF
- All WA load incorporated in WA GHG Zone, consistent with statute and rule

Outcomes

- For all WA load, market optimizes attribution of generation considering total cost, including energy and GHG costs
- Market consistently signals support for low-GHG electricity imports into WA, supportive of state GHG limits

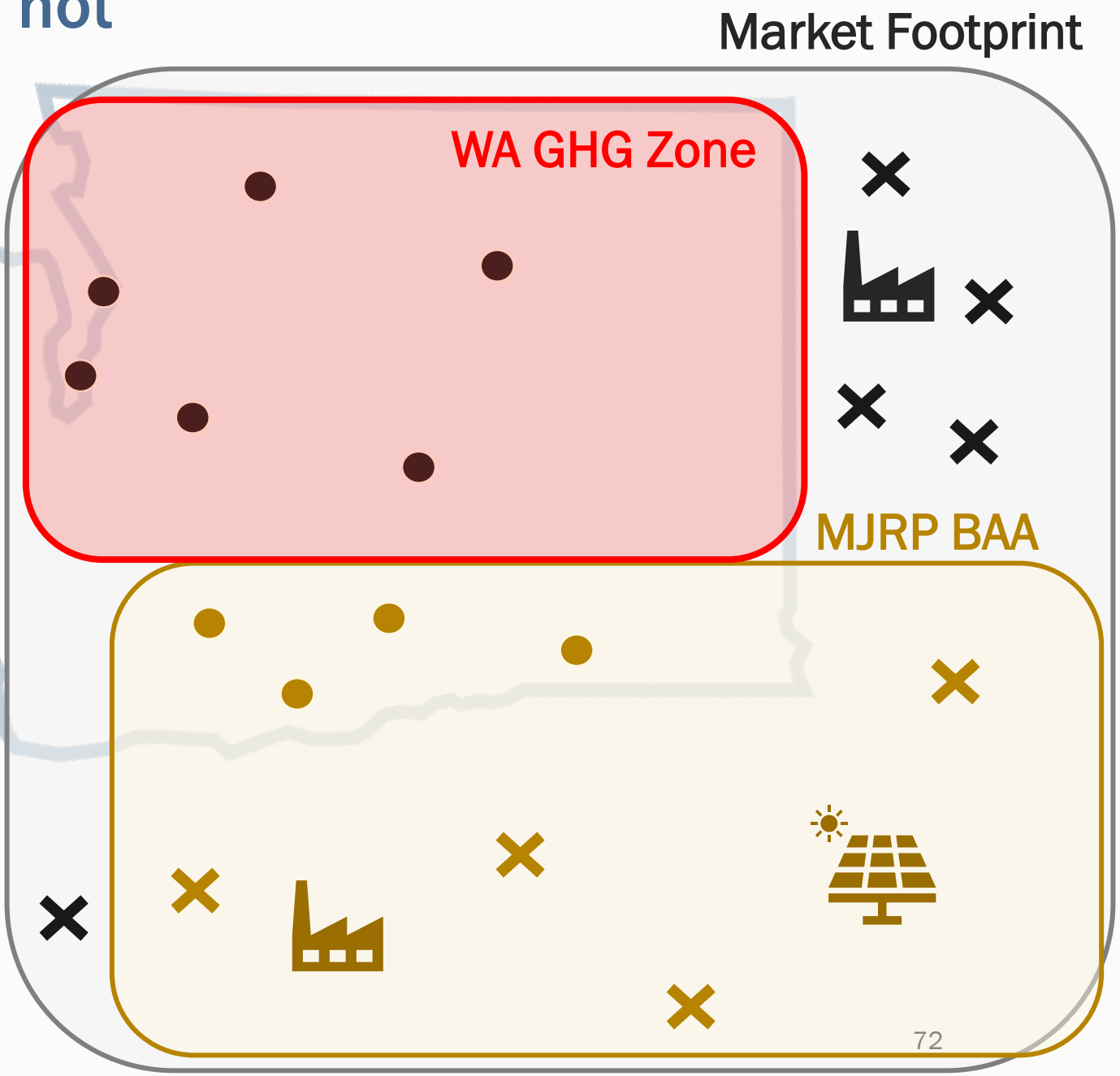


Simple CEM with WA GHG Zone not including WA MJRP load

- Assume all out-of-state resources offer into WA GHG Zone; GHG bids reflect resource EF
- MJRP WA retail load not in WA GHG Zone

Outcomes

- For fraction of WA load, market optimizes attribution of generation considering total cost, including energy and GHG costs
- Imported electricity serving WA MJRP load still covered by CCA
- Imported electricity serving MJRP WA retail load does not receive market signal for low-GHG supply
- Market signals for low-GHG electricity imports into WA only cover fraction of imports covered under state GHG emission limits. Significance dependent on relative size of MJRP WA retail load.



Examples of WA GHG Zone shown to illustrate Ecology understanding of generalized market and GHG impacts. Ecology notes comment from interested parties indicating hurdles and other impacts of a WA GHG Zone inclusive of MJRP retail load.

Requested Feedback

- Do you have support, concerns, or comment on Ecology's assessment of outcomes under a WA GHG Zone w/ MJRP load (slide 75) and a WA GHG Zone w/out MJRP load approach (slide 76)?

Feedback requested

- MJRP non-retail load: Slide 16
- FPMA backstop: Slide 22
- Balancing Energy and Wheels: Slide 26
- CEMs timing: Slide 31
- Surplus and emissions leakage: Slide 61
- MJRP and WA GHG Zone: Slides 70, 74

Please weigh considerations on following slide.

Electricity imports in Cap-and-Invest: Considerations (2)

- Impart appropriate incentives to achieve state GHG emission limits
- Consistently and appropriately assess emissions and compliance obligations
- Consider risk for emissions leakage
- Cohesive across bilateral transactions and various CEMs designs
- Compatibility with potential linkage partners
- Implementation and reporting feasibility
- First-jurisdictional approach

Resources

- Cap-and-Invest Program Updates and Linkage (recent electricity workshops and feedback)
- 2024 Electricity Markets Rulemaking
- WAC 173-441-124 (electricity power entity/electricity importer reporting)
- Stakeholder whitepaper on identifying imports
- Ecology response to whitepaper
- Interim Guidance for Electric Power Entity Reporting
- Asset-controlling supplier (ACS) systems emission factor
- Entity-level reported and covered emissions

Next steps

- Workshop slides and recording will be posted on the rulemaking webpage.
- Submit written comment, until 11:59 p.m. PT on July 18, 2025
- Sign up for the Cap-and-Invest electricity forums and CCA updates email list
- Contact Camille Sultana with questions at CCAElectricity@ecy.wa.gov
- Contact Surabhi Subedi with questions about rulemaking at CPRRulemaking@ecy.wa.gov