Massachusetts Grid Modernization Advisory Council

Meeting Presentation

February 27, 2025

Agenda & Roll Call

Item	Time
Welcome, Roll Call, Agenda	1:00 – 1:05
Public Comment Period	1:05 – 1:20
Administrative Items • Meeting Minutes Review and Voting • Open Meeting Law • Synapse Cost Recovery Memo • 2025 GMAC Meeting Agendas	1:20 – 1:35
Updates on ESMP Activities • LTSPP Stakeholder Engagement • EWG Update	1:35 – 1:45
Break	*1:45 – 1:50*
Metrics Presentations and Discussion • Synapse presentation: Metrics 101 • RMI presentation • GMAC discussion on ESMP Phase II • Draft Framework for ESMP Metrics of Interest to GMAC Members	1:50 – 2:55
Close	2:55 – 3:00

Public Comment

- 15-minute period for public comment
- Speakers will have up to **3 minutes** to speak on any topics of interest related to the GMAC. Once everyone who has pre-registered has provided comment, others may speak, as time allows.
- Please state your name and affiliation before delivering your comment.

GMAC Minutes Review and Voting

Meeting Minutes

- Calling for vote to finalize:
  - January 30, 2025 GMAC minutes
  - February 13, 2025 ExCom minutes

Motion to approve the January 30th GMAC minutes [as distributed/as corrected]?

Motion to approve the February 13th ExCom minutes [as distributed/as corrected]?

Update on Open Meeting Law

- Due to COVID, a temporary provision of OML allows public bodies to hold meetings remotely without a quorum of the public body physically present. This provision is set to expire on March 31, 2025.
- There is pending legislation to make this remote policy provision permanent, but it is unknown if it would pass before the expiration. DOER will monitor this.
    - The EEAC is drafting a letter to the legislature to outline the importance of remote public meetings and to urge that the provision is made permanent.
- For now, DOER will plan for **all GMAC meetings (ExCom and EWG included) to have members in person at 100 Cambridge St. beginning in April 2025.**

Synapse Cost Recovery Memo

- As discussed in the January GMAC meeting, Synapse prepared a memo for the GMAC describing key items in the EDCs' short-term cost recovery proposal. The memo includes:
  - Background on recent DPU Order related to cost recovery
  - Describe Synapse's thoughts about the proposal
  - Offer recommendations on how the proposal could be improved
- The memo was provided as a pre-meeting material.

2025 GMAC Meeting Agendas

- See the proposed agendas and speakers for March – July meetings.
- GMAC members have been suggested as discussion leads for each meeting.

- Two new meeting topics were identified for the fall:
  - Resilience *(separated from the May reliability discussion)*
  - Integrated Energy Planning Pt. 2 *(CCPs and a HEET presentation)*

- We propose that a fall meeting is dedicated to strategic planning.

Date	Topic	Draft Meeting Agenda (See Appendix for Details)
Mar 27	Reporting: biannual report content; metrics	• GMAC Member Discussion – **Led by: (to *invite)* Kyle Murray and Sarah Bresolin Silver**
May 1	System Reliability	• GMAC Member Discussion – **Led by: (to *invite)* Andy Sun and Chris Modlish**
May 29	Proactive Grid Planning (LTSPP Updates)	• GMAC Member Discussion – **Led by: (to *invite)* Kate Tohme and Jonathan Stout**
June 26	Integrated Energy Planning (NPA)	• GMAC Member Discussion – **Led by: (to *invite)* JS Rancourt and Alex Worsley**
July 31	Equity in Grid Planning	• GMAC Members Discussion – **Led by: (to *invite)* Marybeth Campbell and Julie Curti**
New Aug 28	System Resilience	• GMAC Member Discussion – **Led by: (to *invite)* Amy McGuire and Chris Modlish**
Sept 18	Strategic Planning/Biannual Reports	
Oct 30	Integrated Energy Planning (CCP)	• GMAC Member Discussion – **Led by: (to *invite)* Kyle Murray and Sarah Cullinan**

Do GMAC members have any questions? Are members okay with their suggested discussion topics?

ESMP Activities Updates

1. ESMP Phase II
   - Interim ESMP Mechanism
   - Metrics and Reporting
2. CESAG
3. Joint Working Group
4. LTSPP Working Group *(See next 2 slides)*
5. Equity Working Group *(See slide 11)*
6. Other

Do GMAC members have any updates to provide on these items?

LTSPP Working Group Progress Report

Progress Update

- A website has been created for the LTSPP WG with upcoming meetings and meeting materials
- January 10th: EDCs provided a draft LTSPP Framework and February 3rd update filing for stakeholder review
- January 14th: Discussion at meeting of Feb. 3rd filing and draft framework
- January 28th: Discussion at meeting on cost allocation and procedural schedule
- February 3rd: EDC submitted an update filing to the DPU with agreed upon procedural schedule
- February 7th: Stakeholders provided redlines on cost allocation and flexible interconnection in draft framework
- February 11th: Discussion at meeting on cost allocation and flexible interconnection redlines
- February 14th: Stakeholders provided redlines on full draft framework
- February 25th: Discussion at meeting on stakeholder redlines of full framework

Next Steps

- March 6th: EDC's to provide response to redlines, revised draft framework, and draft tariff
- March 11th: Meeting to discuss revised draft framework
- March 18th: Continued discussion of framework redlines
- March 21st: Stakeholder exchange of final redlines
- March 25th: Meeting to finalize consensus/non-consensus redlines
- March 15th-April 4th: Preparation of final report to be filed with DPU

Proposed GMAC Resolution

LTSPP Subgroup Proposal

- LTSPP stakeholder redlines propose formation of an LTSPP subgroup at the GMAC to facilitate stakeholder engagement
- Since DPU does not have jurisdiction over the GMAC, it cannot direct creation of a subgroup
- To enable the GMAC as the forum for stakeholder engagement in the LTSPP, the GMAC members that are active in the LTSPP working group propose that the GMAC submit a letter indicating willingness to establish the subgroup:
  - One page letter informing DPU of willingness to establish subgroup, if it sees fit;
  - GMAC members active in LTSPP working group will draft a letter and send to all GMAC members for review/revision in advance of our March meeting; and
  - In March we will vote on the final version of a letter to be provided to the EDCs for submittal with the LTSPP final report.

Equity Working Group Update

- The EWG recommended that the utilities adopt a uniform definition of equity aligned with definitions used by practitioners / *This was adopted in the drafts and the DPU approved the equity definition.*
- The EWG flagged that the stakeholder engagement metrics were insufficient and did not focus on distributional or structural aspects of equity / *Metrics were not addressed in Phase 1.*
- The EWG requested an improvement in the legibility of public facing documents to (e.g., plain language, multiple language support, following best practices for outreach identified through other projects such as the AGO's stakeholder working group) / *The DPU deferred many of the concerns about outreach to the CESAG.*
- The EWG provided sample metrics in many different categories which would provide transparency on how the EDCs are addressing benefits and burdens as they relate to affordability, resilience, workforce, and several other factors / *Metrics were not addressed in Phase 1.*

Break

Please be ready to start again in ~5 minutes

Data, Metrics, Targets, and Incentives

Regulators use a variety of tools to monitor utility activities and encourage good utility performance.

Reported Data → Metrics → Targets → Financial Incentives

Reported data

- Information included in reports periodically filed with regulators. Can be voluminous. Sometimes publicly available and sometimes confidential.
- *This is the focus of the March GMAC meeting*

Metrics

- A narrower set of data to monitor activities and outcomes of specific interest to regulators and stakeholders. Sometimes referred to as Key Performance Indicators (KPIs).
- *This is the focus of today's GMAC meeting*

Targets (aka Scorecards)

- A specific level of performance that utilities are encouraged to achieve.

Performance Incentive Mechanisms (PIMs)

- Rewards or penalties for meeting or failing to meet targets.

Metrics provide the foundation for targets and PIMs.

- Metrics can be used to set targets.
- Targets can be used to set PIMs.

Performance Areas

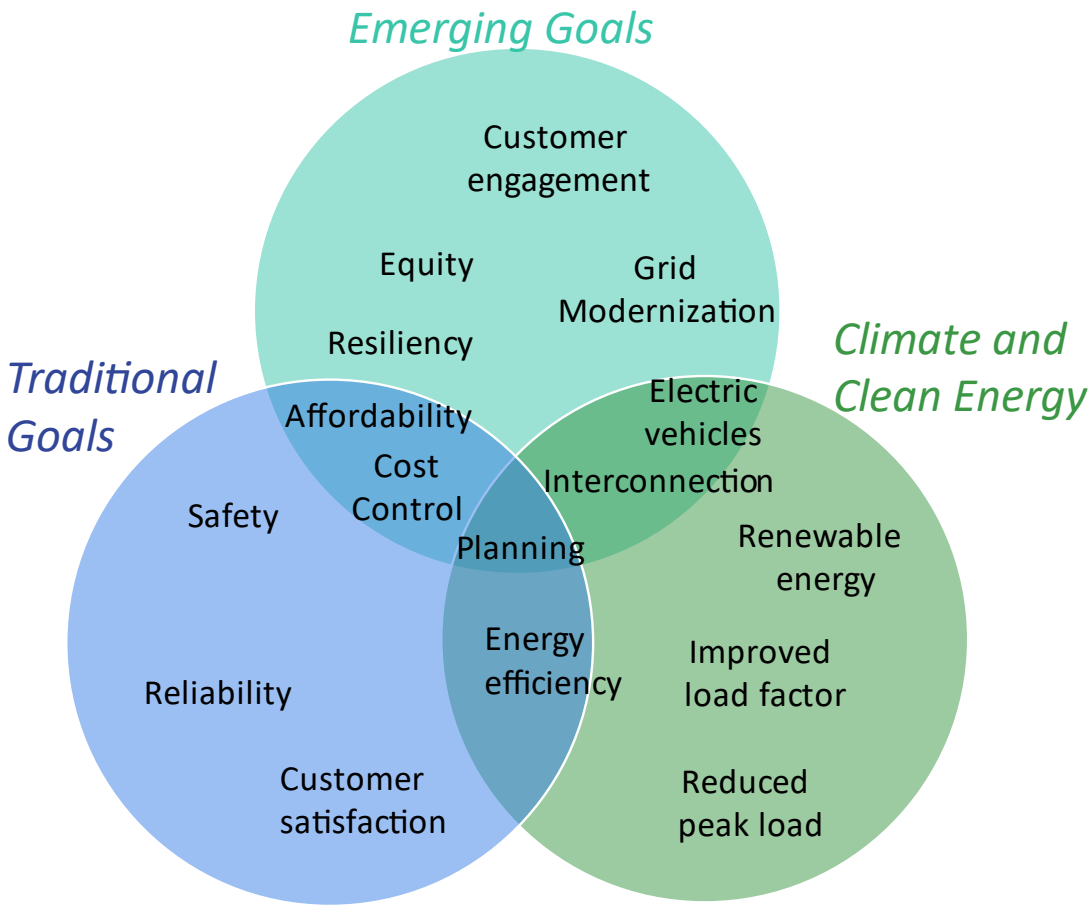
Metrics can serve multiple purposes including:

- Monitoring utility performance
- Tracking progress towards a specific goal
- Providing transparency to stakeholders and to the general public
- Supporting targets and PIMs

Some metrics are in traditional performance areas

Others are in emerging performance areas:

- Grid modernization, equity, resiliency, electric vehicles, DERs, interconnection



Outcome, Program, and Action Metrics

Outcome-Based	Metrics identify a desired outcome but do not specify explicit programs or actions to achieve that outcome. *Advantages: Utility has flexibility, and desired outcomes clear*
Program-Based	Metrics focus on a desired outcome through a particular program or initiative, especially those that have been reviewed. *Advantages: Monitor program outcomes and performance*
Action-based	Metrics focused on specific utility actions but do not measure the impacts or the outcomes of those actions. *Advantages: Ensure specific actions are accomplished*

Metric Design Principles

Metrics should:

EDC Principles

- Be objective
- Be measurable by the EDC
- Be within control of the EDC

Additional Principles

- Have a clear definition
- Be quantifiable using reasonably available data
- Be easily interpreted
- Be verifiable

Considerations for Identifying Metrics of Interest

What are the priority areas of performance?

What are the key purposes of the metrics?

Should metrics be outcome-based, program-based, or activity-based?

How should the metrics be organized for easy access and understanding?

How frequently should metrics be reported?

How frequently should metrics be modified, expanded, or reduced?

Questions for GMAC members to consider:

- **What ESMP performance areas are you most interested in?**
- **How will ESMP metrics best serve your needs?**

Dashboards

There can be many, many metrics of interest to regulators, stakeholders, and the public

- Which can make it difficult to sift through and monitor key metrics of interest

Dashboards can be used to organize and present metrics

- To make them most useful for all

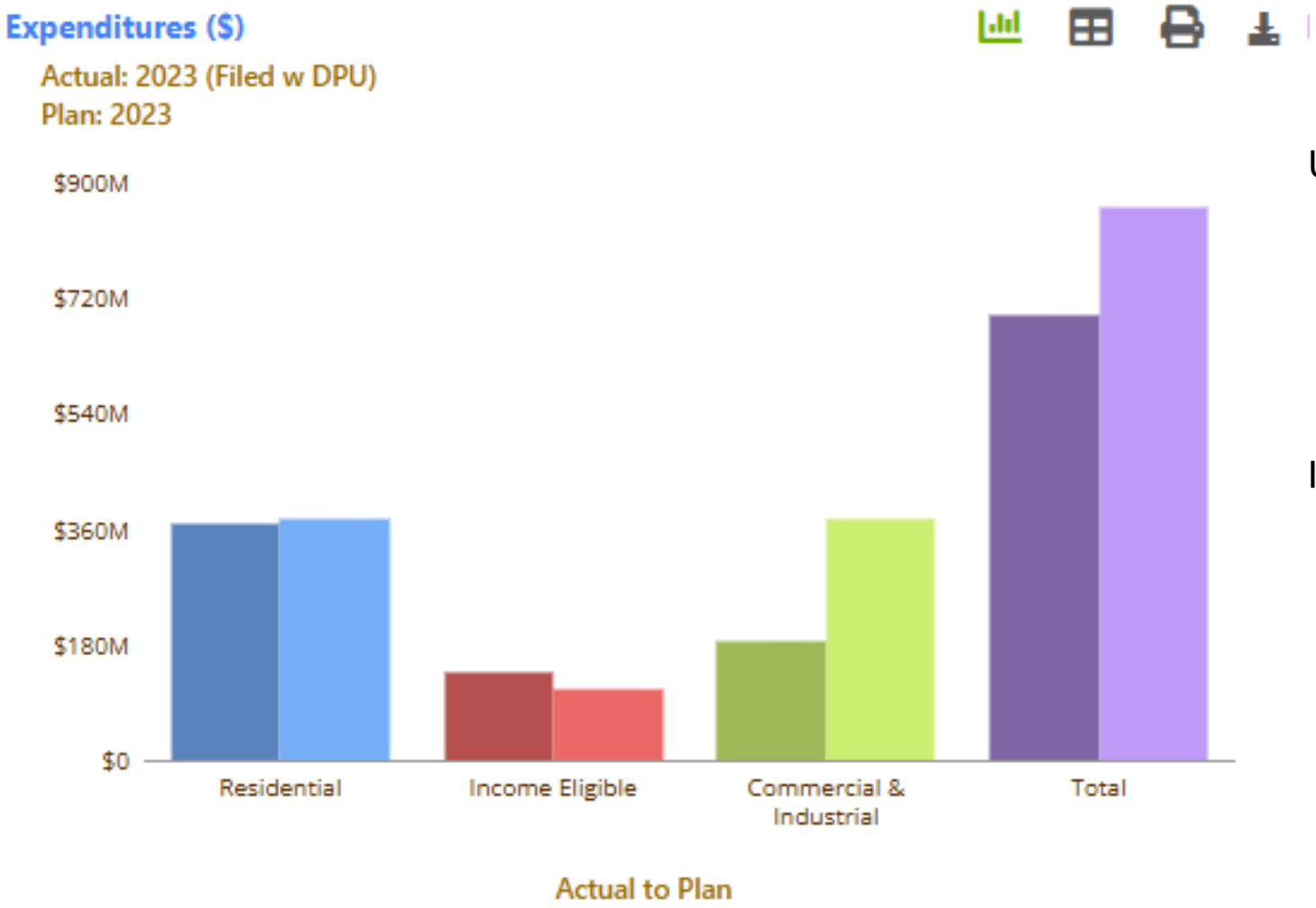
Dashboards can be designed to be

- Publicly available – available to regulators, stakeholders, and members of the public
- Readily accessible – on an open website
- Easily understandable – presented in tables and charts
- Analyzable – Users can download Excel workbooks that are machine-readable and usable
- Prioritized – Organized in ways that allow users to easily find information most important to them

Dashboard Examples

- Mass Save
- Hawaii
- Puerto Rico

Example Dashboard – Mass Save Energy Efficiency



Users can filter the data by:

- Years of activity, from 2010 to the present
- Electric, gas, or both
- Each Program Administrator, or all
- Residential, Income-Eligible, C&I, or all

Includes key EE program metrics:

- Planned versus actual for the following:
- Expenditures ($)
- Benefits ($)
- Annual savings (MWh, MW, therms, MMBtu)
- Lifetime savings (MWh, MW, therms, MMBtu)

Metrics Currently Reported by Massachusetts EDCs

Current EDC Metrics (I)

Proceeding	Category	Metric examples
Service Quality (D.P.U. 24-SQ-10/ 24-SQ-11/24-SQ-13)	Reliability	SAIDI, SAIFI, CKAIFI
	Safety	Lost Work Time Accident (LTA) and Restricted Work Day (RWD) Rates
	Downed wires	Average Response Times
	Customer satisfaction	Residential Customer Satisfaction Survey
Electric Vehicles (D.P.U. 21-90/21-91/21-92)	Performance	kW usage per port, total charging events per port, average plug-in time duration
	Equity	Total EV program spending in EJ and non-EJ communities
Energy Efficiency (D.P.U 24-147-24-149)	Key Performance Indicators	Heat pump installations by fuel replacement and building type
	Performance Incentive	Plan EE and ADR benefits
Interconnection Timeline Enforcement (D.P.U 24-46/ 24-44/24-34)	Timeline Enforcement	Aggregate necessary timeframes % of aggregate necessary timeframes under standards for interconnection of distributed generation tariff

Current EDC Metrics (II)

Proceeding	Category	Metric examples
Rate Case Scorecard and PIMs (D.P.U 22-22, 23-150, 23-80)	Eversource	*Customer satisfaction, customer engagement, producer satisfaction, producer/developer engagement, operations, peak demand reduction, GHG reduction, electrification, equity/low-income, resiliency*
	National Grid	***PIMs**: Increased enrollment in the low-income discount program; first call resolution; digital customer engagement; fleet electrification; and MW of DER interconnected to the system*
		***Scorecard:** customer satisfaction survey, outage communication, GHG emissions reduction, and DER program participation, low-income service terminations*
	Unitil	*Customer satisfaction and engagement, peak demand reduction, GHG reduction*
Annual Reliability Reports (24-ARR-01, 24-ARR-02, 24-ARR-04)	Reliability	*Circuit and feeder-level SAIDI, CAIFI, etc. estimated cost of future projects, estimated capital cost of future projects, tree crews available by month, feeder-level peak demand*
Grid Modernization	Infrastructure	*Number of devices or other technologies deployed*
	Performance	*Volt VAR Optimization (VVO) Energy Savings*
	AMI	*Total number and percentage of customers being actively served by the company but who opted-out of AMI*

Current Grid Modernization and AMI Metrics (I)

D.P.U established Grid Mod and AMI metrics in 21-80/81/82 *

Grid Modernization

- Current grid mod metrics not tied to incentives/ penalties
- EDCs report EDC-specific and statewide metrics
- Infrastructure metrics – track implementation of grid mod technologies
- Performance metrics – assess performance of grid mod technologies

Advanced Metering Infrastructure (AMI)

- National grid and Eversource report on customer-facing metrics in their AMI factor filings, Unitil reports with annual Grid Mod report
- DPU provided a reporting template for customer-facing performance metrics.

*These are the dockets in which DPU approved metrics. Current dockets for reporting metrics are available at: https://www.mass.gov/info-details/grid-modernization-and-ami-filings-and-reports

Current Grid Modernization and AMI Metrics (II)

Category	Sub-Category	Metric examples
Infrastructure	Statewide	*Grid connected distributed generation facilities*
		Number/percentage of circuits with installed sensors
	By EDC	*Number of devices or other technologies deployed*
		Associated cost for deployment
		Reason for deviation between actual and planned development for the plan year
		Projected deployment for remainder of the three-year term
Performance	Statewide	*Volt VAR Optimization (VVO) Energy Savings*
	Company-Specific	*(National Grid) Main Line Customer Minutes of Interruption Saved*
		(National Grid/ Eversource) Numbers of Customers that benefit from GMP funded Distribution Automation Devices
AMI	Deployment	*Planned and actual AMI customers*
	Outreach	*Customer engagement outreach events with date, topics, target population, etc.*
	Outcome	*Total number and percentage of customers being actively served by the company but who opted-out of AMI*

EDC Proposed ESMP Metrics (I)

The EDCs jointly proposed metrics in two categories in their ESMP filings.

Stakeholder Metrics

1. Number of stakeholder* outreach and involvement meetings about the ESMP filings
2. Number of stakeholder outreach and involvement meetings about specific ESMP infrastructure projects
3. The number and category of stakeholder requests related to ESMP infrastructure projects and the EDC's response (i.e. under consideration, implemented, not accepted with reason)

* Stakeholders include: EJCs, municipal leaders, community- based organizations and residential, commercial and industrial customers, and DER customers

Do GMAC members have questions for the EDCs on these proposed metrics?

EDC Proposed ESMP Metrics (II)

Incremental ESMP Investments

1. Achievement dates of “ready for load” for major ESMP infrastructure projects
2. The percentage of customers covered by/benefiting from incremental ESMP resiliency investments
3. Increase in DER hosting capacity and load serving capacity by substation

   Will also report percentage of benefits located in an EJC.
4. GHG reductions impact enabled
5. DERMs (beginning in 2026): a) number of participating sites, b) amount in kW of non-company owned dispatchable assets the utility can control, c) number of instances sites are dispatched

Do GMAC members have questions for the EDCs on these proposed metrics?

Prior GMAC Comments and Recommendation

The GMAC provided comments and recommendations on ESMP metrics in the 2023 GMAC ESMP Report.
A selection of key comments are summarized below. The full text of the comments is provided in the appendix.

- The proposed metrics lack detail about how they directly relate to ESMP investments
- EDCs should include additional reporting metrics that are tied to the ESMP proposals, e.g.,
  - increase in DER hosting capacity
  - power quality improvements
  - reliability improvements
  - GHG reductions
  - Use of distributed energy resources management systems
- EDCs should include specific metrics and quantification methods for determining the incremental impact of proposed ESMP investments.

- The EDCs should develop goals and metrics to measure the efficacy of proposed stakeholder engagements
- Metrics, baselines, and targets should be used to document 5- and 10-year planning solutions
- EDCs should include reporting metrics related to workforce development training programs, ideally aligned with those produced by the Equity Working Group

Best Practices and Examples

Stephanie Bieler, RMI

Different metric types may be warranted depending on data availability and desired utility actions

Metric Type	Description	Examples for Peak Demand Reduction
Outcome-based	• Focus on whether an outcome is achieved	• MW of total system peak demand reduction
Program-based	• Measure performance of specific utility programs	• % of households enrolled in a time-varying rate • MW of load participating in a demand response program
Activity-based	• Track specific utility actions or decisions	• Number of marketing materials announcing a time-varying rate sent to customers • % of households with advanced meters installed

Source: RMI (2020). *PIMs for Progress: Using Performance Incentive Mechanisms to Accelerate Progress on Energy Policy Goals*.

Principles to guide metric development

- Performance metrics and incentives should:
  - Be clearly defined
  - Be easily quantified, interpreted, and verified using reasonably available data
  - Align with public policy goals
  - Focus on outcomes where possible rather than inputs

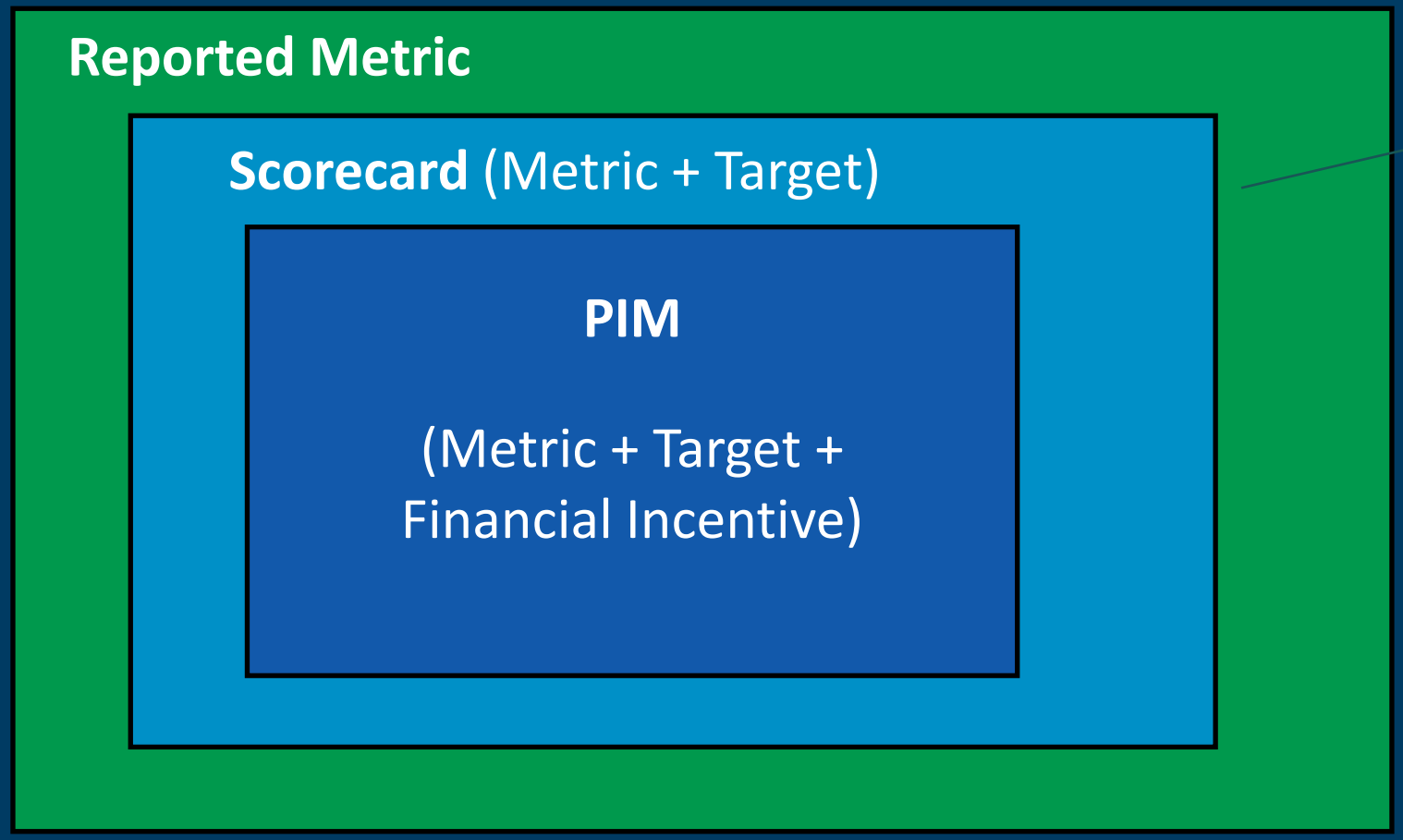
Example: GHG Emissions Metrics

GHG emission metrics often track absolute emissions or emissions intensity

Metric	Metric Formula Options
SO_2 Emissions	Tons, Tons/year, lbs/kWh
Average NOx Rate	lbs/MMBtu
Total Criteria Pollutant Emissions	Total pollutants emitted/year
Total Criteria Pollutant Emissions Intensity	Total pollutants emitted/MWh
GHG Emissions (CO_2, Methane, SF_6, etc)	Tons/year; Tons/customer
CO_2 Emissions Intensity	CO_2 tons/MWh; grams/kWh
Fossil Carbon Emissions Rate	Tons/MWh fossil generation
Emissions Avoided by Electrification of Other Sectors	Tons/year

Metrics, scorecards, and PIMs are closely related

Reported metrics, scorecards, and PIMs are designed to illuminate performance against a desired outcome.



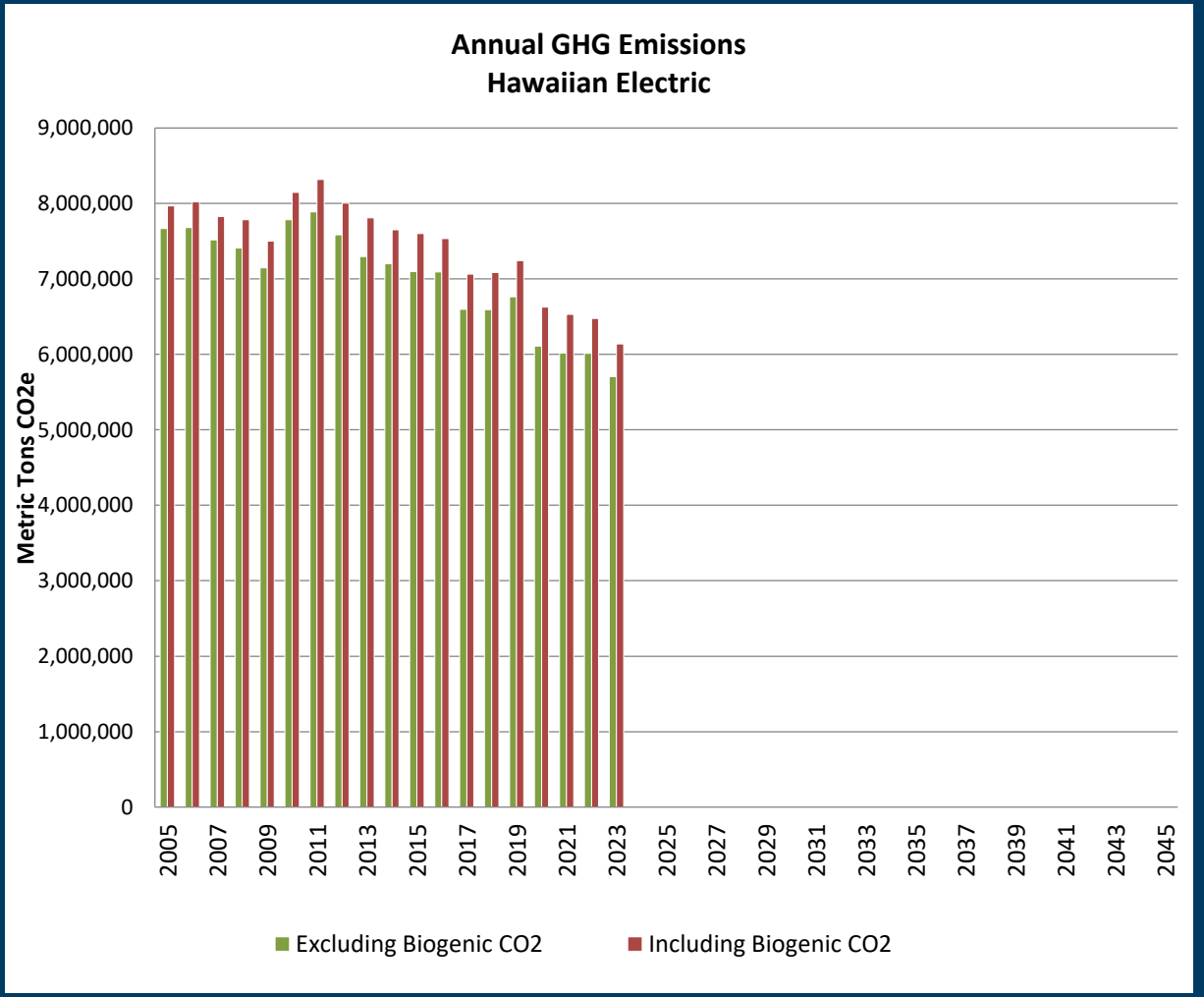
Even though reported metrics and scorecards do not offer a direct financial incentive, they can create an implicit **"reputational" incentive**. For instance, utilities may feel motivated to improve their publicly reported performance, understanding its influence on their standing with customers, regulators, and shareholders. PIMs can provide both a financial and reputational incentive.

Example: Hawaii GHG Emissions

Metric:
GHG emissions in CO2e emissions per year in metric tons, reflecting emissions that both include and exclude biogenic CO2e

Additional Definition Components:

- **Frequency of Reporting:** Annual
- **Granularity:** Consolidated across all islands
- **Data Source:** Data is as reported to the Hawaii Department of Health

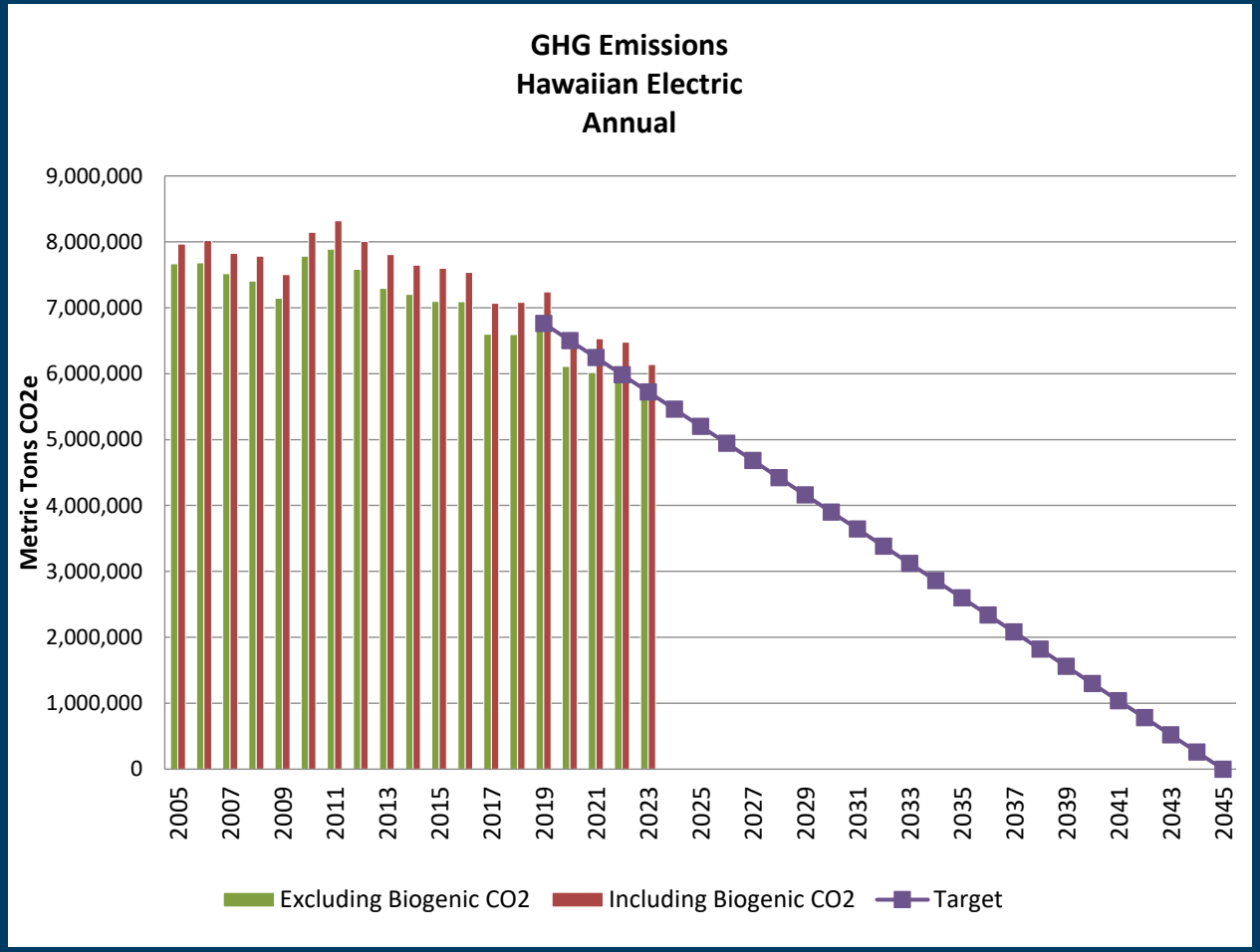


Source: Hawaiian Electric GHG Emissions Scorecard

Example: Hawaii GHG Emissions Scorecard – Adding a Target

Metric:
GHG emissions in CO2e emissions per year in metric tons, reflecting emissions that both include and exclude biogenic CO2e

Target:
A straight-line reduction from 2019 GHG emissions to the 2045 target of carbon neutrality



Source: Hawaiian Electric GHG Emissions Scorecard

Example: ConEdison Beneficial Electrification ("BEEL")

Metric:
Total lifetime CO2e emissions reductions provided by annual incremental beneficial electrification technologies adopted during the rate year

Eligible Technologies Include:

- Battery and plug-in hybrid EVs
- EV buses
- Medium & heavy duty EVs
- Air- and ground-source heat pumps and mini-splits

Additional Definition Components:

- **Frequency of Reporting:** Annual
- **Granularity:** Reported by technology
- **Data Sources:**
  - ConEdison Programs (e.g. Clean Heat)
  - Atlas Public Policy's EvaluateNY
  - Publicly available permit data

Beneficial Electrification EAM Achievement (as of Feb 29, 2024)

Technology	Number of Units	Lifetime CO2e Emissions Reductions (Metric Tons)
Air-Source Heat Pump	35,506	271,470
Ground-Source Heat Pump	119	6,158
Battery Electric Vehicle	10,781	168,723
Plugin Hybrid Electric Vehicle	4,235	60,772
Electric Bus	9	13,064
Medium- and Heavy-duty Electric Vehicles	280	32,802
Total		**552,989**

Source: 2022 ConEd Earnings Adjustment Mechanism Report

Example: ConEdison Beneficial Electrification ("BEEL") – adding an incentive & target

Metric:
Total lifetime CO2e emissions reductions provided by annual incremental beneficial electrification technologies adopted during the rate year

Target:
Minimum, midpoint and maximum targets set at 5%, 20% and 35% above a baseline projection for emissions avoided by eligible technologies

Financial Incentive:
Upside only; 2, 5, and 10 basis points for achievement of minimum, midpoint, or maximum targets, respectively

Targets by Year

Year	Minimum	Midpoint	Maximum	Achieved
2020	298,294	340,908	383,521	219,820
2021	400,737	457,985	515,234	N/A*
2022	439,063	501,786	564,510	552,989

*Insufficient data available to report territory-wide adoption

Source: 2020, 2021, 2022 ConEd Earnings Adjustment Mechanism Report

Other Metric Examples

DER metrics often track interconnection timeliness, deployment, and utilization

DER Utilization

- DERs capable of providing grid services
- DERs enrolled in grid services program
- DERs being utilized for grid services
- DERs being curtailed
- Savings from non-wires solutions
- MWh sold back to utility

DG Deployment

- Number of installations per year
- Number of customers / MW participating in net metering or similar tariffs
- MW installed by type (PV, CHP, small wind, etc.)
- MWh generated as % of sales

Ease of Interconnection

- Average interconnection time (days within the utility's control)
- Customer satisfaction survey responses

Storage Deployment

- Number of installations per year
- MW installed capacity by type (battery, thermal, etc.)
- MWh installed capacity as % sales

Demand-side and EE metrics often track program participation, energy, and demand savings

Energy Efficiency

- Annual and lifetime MWh energy efficiency savings
- Program costs per MWh energy saved
- EE Resource Standard (EERS) achievement
- Number and percent of customers participating in EE programs

Demand Flexibility

- Number and percent of customers participating in DR programs
- MW participating in DR programs
- Annual demand reduction as % of load
- Annual and lifetime peak demand savings (MW)
- Amount of DR that shapes, shifts, and sheds load

There is a wide scope of metrics that can focus on affordability and customer equity

Affordability

- Average monthly residential bill
- Average monthly residential bill as a percent of annual income from low-income families
- Percent of residential customers by payment status / in arrears / disconnected for non-payment
- O&M / rate base per customer / MWh
- Energy / capacity costs per customer / MWh / MW

Customer Equity

- Number / percent of customers that are LMI participating in DER or EE programs
- Number / percent of customers that are LMI accessing customer portals
- EV charging infrastructure installed in LMI communities
- Reliability in targeted communities

Draft Framework for ESMP Metrics of Interest to GMAC Members

Considerations in Identifying ESMP Metrics of Interest

1. Recognize existing Massachusetts metrics and reporting requirements
2. Identify goals of ESMP metrics
   - Monitor EDC activities
   - Achieve specific outcomes
   - Provide transparency and information to stakeholders
   - Communicate impact of investments to broader public
   - Help GMAC provide input to EDCs
   - Inform next ESMPs
3. Identify priority areas of performance
4. Identify geographic scope of interest
   - Examples: System, circuit, substation, community or municipality.
5. Reporting options
   - Frequency of reporting
   - Dashboards

Performance Areas of Interest to GMAC

Infrastructure Development

- Reliability
- Resilience
- Hosting capacity
- Headroom
- Specific projects

Resources Enabled

Heat pumps, EVs, distributed PV, distributed storage

- actual & compared with state targets

GHG emission reductions:

- actual and compared with state targets

Electric and gas planning coordination

Customer Equity

Environmental justice (EJ) communities compared with other communities

- Infrastructure development
- Resources enabled
- Dollars invested
- Benefits vs. burdens
- Participation rates

Costs

<u>Historical</u>:

- budgeted versus actual costs

<u>Future</u>:

- Proposed budgets
- Rate impacts
- Alternatives considered
- Benefit-cost analysis

Infrastructure Development

Category	Example Metrics	Geographic Detail	Source
Reliability	SAIDI, SAIFI, CAIFI, etc.	System, circuit	ARR
Resilience	Same as reliability except that outages during major events are included	System, circuit	ARR
	Percentage of customers benefitting from ESMP resilience investments	System, circuit	EDC
Hosting Capacity	Increase in DER hosting capacity and load serving capacity by substation	System, circuit	EDC
Headroom	Ratio of current load to hosting capacity	System, circuit, substations	EDC
DER	DER penetration as a percent of peak load	System, circuit	EDC
Projects	Achievement dates of major ESMP projects	System	EDC
	DERMs: # sites, kW non-company dispatchable, # times sites are dispatched.	System, circuit	EDC

Metrics in blue were proposed by the EDCs.

Resources Enabled

Category	Example Metrics	Geographic Detail	Source
Heat pumps	MWs, MWh, actuals versus targets	System, circuit	EDC
EVs	MWs, MWh, actuals versus targets	System, circuit	EDC
BESS	MWs, MWh, actuals versus targets	System, circuit	EDC
Distributed PV	MWs, MWh, actuals versus targets	System, circuit	EDC
Demand response	MWs, MWh, actuals versus targets	System, circuit	EDC
Energy efficiency	MWs, MWh, actuals versus targets	System, circuit	EE Reports
Non-wires alternatives	MWs, MWh, actuals versus targets	System, circuit	EDC
Micro-grids	MWs, MWh, actuals versus targets	System, circuit	EDC
Virtual power plants	MWs, MWh, actuals versus targets	System, circuit	EDC
GHG Emissions	GHG Reductions enabled	System	EDC

Metrics in blue were proposed by the EDCs.

Customer Equity

Category	Example Metrics	Geographic Detail	Source
Infrastructure Development	All the infrastructure development metrics. Presented (a) for circuits containing EJ communities and (b) for all other circuits.	Circuit	Infrastructure metrics
Resources Enabled	All the resources enabled metrics. Presented (a) for circuits containing EJ communities and (b) for all other circuits.	Circuit	Resources metrics
Dollars Invested	EDC funds spent on infrastructure. Presented (a) for circuits containing EJ communities and (b) for all other circuits. Presented in total cost and in costs per customer.	Circuit	ESMP Cost Recovery Filings
Stakeholder Initiatives	Number of community benefit agreements, terms of agreements	Community	EDC
	Number of stakeholder outreach meetings about ESMP filings	Community	EDC
	Number of stakeholder outreach and involvement meetings about specific ESMP infrastructure projects	Community	EDC
	Number and category of stakeholder requests related to ESMP infrastructure projects and EDC's response	Community	EDC

Metrics in blue were proposed by the EDCs. Many of these metrics were proposed by the Equity Working Group.

Costs

Category	Example Metrics	Geographic Detail	Source
Historical Costs	Annual budgets by category (see table below)	System	ESMP Cost Recovery Filings
	Actual costs incurred by category	System	ESMP Cost Recovery Filings
	Differences between budgets and costs incurred by category	System	ESMP Cost Recovery Filings
Future Costs	Annual budgets by category	System	ESMP Cost Recovery Filings
	Forecast of rate impacts	System	ESMP Cost Recovery Filings
	Descriptions of alternatives considered	System	ESMP Cost Recovery Filings
	Results of BCA	System	ESMP Cost Recovery Filings

Categories of Costs	Customer Investments, Platform Investments, Network Investments, Resiliency, Program Administration
	Specific large projects, e.g., DERMS

Questions for Developing This Proposal Further

Are there important performance areas missing?

Are there important metrics missing?

Are there too many metrics?

Which reports should the metrics be presented in?

- March biannual report
- September biannual report
- Cost Recovery Filing

What should be the frequency of reporting?

How can the metrics be reported in a way that prioritizes them and makes them easily accessible and understandable?

Should the metric results be provided through a dashboard?

Close and Next Steps

- The next **GMAC** meeting is March 27, 2025 from 1 – 3 PM
- The next **EWG** meeting is March 28, 2025 from 10 – 11:30 AM
- The next **ExCom** meeting is April 24, 2025 from 9:30 – 10:30 AM

Appendix

March – May Meeting Agendas

Meeting	Topic	Learning Goals/Events	Draft Meeting Agenda

Mar 27	Reporting: biannual report content; metrics	• What is the goal of utility reporting?
		• How well do existing utility reports cover ESMP issues?
		• What should be in the ESMP biannual reports?
		
		Ongoing DPU Docket Phase II
			• **EDC Presentation**
			  • EDCs present proposed Biannual Report template (filed with DPU on March 18th)
			• **GMAC Consultant Presentation**
			  • Reporting requirements in other jurisdictions
			• **GMAC Member Discussion – Led by: (to *invite)* Kyle Murray and Sarah Bresolin Silver**
			  • *Discussion points to include:* Function of March versus September reports
			  • What goes in reports beyond metrics?
			  • Grid Mod reports versus ESMP reports
			  • Should ESMP reports contain information in one central location, even if it is reported elsewhere?

May 1	System Reliability	• What information is included in the annual reliability reports (ARRs)?
		• How do utilities plan and measure grid reliability?
		
		ARR filed 3/31; Service Quality filed 3/1
			• **EDC Presentation**
			  • High-level summary of recent reliability performance. Reliability planning in general, focused on conventional practice, i.e., prior to ESMPs
			  • Reliability considerations in the current and future ESMPs, focused on long-term needs and uncertainty.
			• **DPU Presentation**
			  • How does the DPU review the ARRs?
			• **GMAC Member Discussion – Led by: (to *invite)* Andy Sun and Chris Modlish**
			  • Discuss the various resilience reporting requirements and planning processes by the state and EDCs

May – June Meeting Agendas

Meeting	Topic	Learning Goals/Events	Draft Meeting Agenda

May 29	Proactive Grid Planning (LTSPP Updates)	• What was the outcome and the recommendations the LTSPP discussions?
		• What are the implications for ESMPs?
		
		LTSPP WG report due to DPU 4/4
			• **EDC Presentation**
			  • Summary LTSPP process, outcomes, and next steps.
			• **GMAC Member Presentations**
			  • DOER's, AGO's, and DG developers' perspectives of LTSPP process
			  • Other members' perspectives
			• **DOER Presentation**
			  • Next steps regarding LTSPP discussions
			• **GMAC Member Discussion – Led by: (to *invite)* Kate Tohme and Jonathan Stout**
			  • Discuss how GMAC can engage with long-term system planning before next ESMPs

June 26	Integrated Energy Planning	• What are the implications of the Climate Compliance Plans for ESMPs?
		• How are EDCs and LDCs following up on the Future of Gas Order (DPU 20-80)?
		• What is the NPA Framework?
		
		Climate Compliance Plans filed 4/1; Joint Working Group
			• **Outside Expert Presentation: Lawrence Berkeley National Laboratory and Regulatory Assistance Project**
			  • Opportunities for integrating electric and gas planning from recent LBNL Report
			• **EDC Presentation**
			  • Summary of the Joint Working Group (JWG) and non-pipeline alternative (NPA) process, discussions, proposals, and next steps.
			  • Coordination of integrated energy planning and ESMP. Coordination between the JWG and GMAC.
			• **GMAC Member Discussion – Led by: (to *invite)* JS Rancourt and Alex Worsley**
			  • Share member perspectives on the Joint Working Group.

July – August Meeting Agendas

Meeting	Topic	Learning Goals/Events	Draft Meeting Agenda

July 31	Equity in Grid Planning	• How should equity be incorporated into ESMPs?
		• How can the GMAC facilitate community engagement for improved grid planning?
		• What is distributional equity analysis?
		
		On-going CESAG Meetings
			• **GMAC Consultant Presentation**
			  • Present summary of practices from other states, including equity in grid planning and distributional equity analysis
			• **EDC Presentation**
			  • Update on process, discussions, and next steps for CESAG
			  • Community Engagement Framework
			  • EDC's approach to addressing equity in (a) implementing ESMP investments and (b) planning for future ESMP investments
			• **EWG Presentation**
			  • Summary of EWG's goals, priorities, and recommendations
			  • EWG's response to EDC presentation
			• **GMAC Members Discussion – Led by: (t*o invite)* Marybeth Campbell and Julie Curti**
			  • Equity issues and concerns of other GMAC members
			  • Next steps on addressing equity in ESMPs

Aug 28	System Resilience	• How does resilience differ/relate to reliability?
		• How do the EDCs and state plan for resilience?
		• How does climate change impact grid resilience?
		
		Follow-up from reliability discussions
			• **EDC Presentation**
			  • High-level summary of recent resilience performance. Resilience planning in general, focused on conventional practice, i.e., prior to ESMPs
			  • Resilience considerations in the current and future ESMPs, focused on long-term needs and uncertainty
			• **ResilientMass Action Team (RMAT) Presentation**
			  • Presentation on state resiliency planning processes and ResilientMass Plan implementation
			  • Reliability and resilience planning requirements in Massachusetts, standards, metrics, targets, incentives
			• **GMAC Member Discussion – Led by: (t*o invite)* Amy McGuire and Chris Modlish**

September – October Meeting Agendas

Meeting	Topic	Learning Goals/Events	Draft Meeting Agenda

Sept 18	Strategic Planning	• How should equity be incorporated into ESMPs?
		• How can the GMAC facilitate community engagement for improved grid planning?
		• What is distributional equity analysis?
		
		On-going CESAG Meetings
			• **GMAC Consultant Presentation**
			  • Present summary of practices from other states, including equity in grid planning and distributional equity analysis
			• **EDC Presentation**
			  • Update on process, discussions, and next steps for CESAG
			  • Community Engagement Framework
			  • EDC's approach to addressing equity in (a) implementing ESMP investments and (b) planning for future ESMP investments
			• **EWG Presentation**
			  • Summary of EWG's goals, priorities, and recommendations
			  • EWG's response to EDC presentation
			• **GMAC Members Discussion – Led by: (to *invite)* Marybeth Campbell and Julie Curti**
			  • Equity issues and concerns of other GMAC members
			  • Next steps on addressing equity in ESMPs

Oct 30	Integrated Energy Planning	• What are the implications of the Climate Compliance Plans for ESMPs? *Follow-up from first integrated energy planning discussion*	• **EDC Presentation** • **HEET Presentation** • Discuss progress on the development of a geothermal siting optimization tool • **GMAC Member Discussion – Led by: *(to invite)* Kyle Murray and Sarah Cullinan**

2023 GMAC Observations and Recommendations on Metrics

R-81. The ESMPs should include additional reporting metrics that are tied to the ESMP proposals, such as achievement dates, improvements to reliability reporting metrics such as SAIDI and SAIFI, increase in DER hosting capacity, GHG emissions reductions, power quality, smart inverter controls, and the use of distributed energy resource management systems (DERMS).

R-82. The reporting metrics proposed in the ESMPs should include specific metrics and quantification methods for determining the incremental impact of proposed investments. For example, the ESMPs should explain in detail how resilience will be measured, how the EDCs will identify which customers benefit, and how GHG emission reductions will be determined.

R-83. The reporting metrics proposed in the ESMPs should identify the incremental impacts of the proposed EDC investments, and should describe how the EDCs will measure those incremental impacts.

R-84. The reporting metrics proposed in the ESMPs should include sufficient detail to enable review and implementation, including definitions. For example, the ESMPs should clearly define “major ESMP infrastructure projects,” including the categories in which such investments fall.

R-88. The ESMPs should present all reporting metrics in an appendix, including all the equity reporting metrics and all the other ESMP reporting metrics.

2023 GMAC Observations and Recommendations on Metrics

O-11. The EDCs' reporting metrics lack detail, including how certain reporting metrics are defined, how they will be measured, and how they directly relate to EDC investments.

R-14. The EDCs in coordination with the CESAG should develop goals and clear reporting metrics of success by which to measure the efficacy of proposed stakeholder engagement, including:

a. Clearly defined identification of stakeholder groups, historical concerns, and potential conflicts with other stakeholder groups' interests […]

f. Methods for tracking, organizing, analyzing, and responding to stakeholder feedback in a way that provides transparency so that stakeholders know what input was incorporated and what input was not incorporated. *(Note: c-d omitted here)*

R-17. To clarify the CESAG's focus and measure its success, the GMAC recommends that the CESAG:

c. Adopt quantifiable reporting metrics *(Note: a-b and d-e omitted here)*

R-30. The [5- and 10 year] planning solutions should be documented using relevant reporting metrics, baselines, and targets, such as:

a. System-wide increases in DER hosting capacity in MWs by year,

b. System-wide capacity increases in MWs by year, and

c. System-wide reliability/resilience improvements (interruption and duration, with and without major events) by year.

R-80. Regarding workforce benefits, the ESMPs should:

a. Include reporting metrics related to the training programs, ideally aligned with those produced by the Equity Working Group *(Note: b-f omitted here)*

Existing Grid Mod Metrics (excerpt)

Table 10. Infrastructure Metrics Overview

Metric		Description	Applicable IAs	Metric Responsibility*
IM-1	Grid Connected Distribution Generation Facilities	Tracks the number and type of distributed generation facilities in service and connected to the distribution system	ADMS/ALF	EDC
IM-2	System Automation Saturation	Measures the quantity of customers served by fully or partially automated devices.	M&C, ADA	EDC
IM-3	Number and Percent of Circuits with Installed Sensors	Measures the total number of circuits with installed sensors which will provide information useful for proactive planning and intervention.	M&C	EDC
IM-4	Number of Devices or Other Technologies Deployed	Measures how the EDC is progressing with its GMP from an equipment or device standpoint.	All IAs	Evaluator
IM-5	Cost for Deployment	Measures the associated costs for the number of devices or technologies installed; designed to measure how the EDC is progressing under its GMP.	All IAs	Evaluator
IM-6	Deviation Between Actual and Planned Deployment for the Plan Year	Measures how the EDC is progressing relative to its GMP on a year-by-year basis.	All IAs	Evaluator

Table 11. Performance Metrics Overview

Metric		Description	Applicable IAs	Metric Responsibility*
PM-1	VVO Baseline	Establishes a baseline impact factor for each VVO-enabled circuit which will be used to quantify the peak load, energy savings, and greenhouse gas (GHG) impact measures.	VVO	All
PM-2	VVO Energy Savings	Quantifies the energy savings achieved by VVO using the baseline established for the circuit against the annual circuit load with the intent of optimizing system performance.	VVO	All
PM-3	VVO Peak Load Impact	Quantifies the peak demand impact VVO/CVR has on the system with the intent of optimizing system demand.	VVO	All
PM-4	VVO Distribution Losses without Advanced Metering Functionality (AMF) (Baseline)	Presents the difference between circuit load measured at the substation via the SCADA system and the metered load measured through advanced metering infrastructure.	VVO	All
PM-5	VVO Power Factor	Quantifies the improvement that VVO/CVR is providing toward maintaining circuit power factors near unity.	VVO	All

Source: Grid Modernization 2022 Evaluation Report: Communications