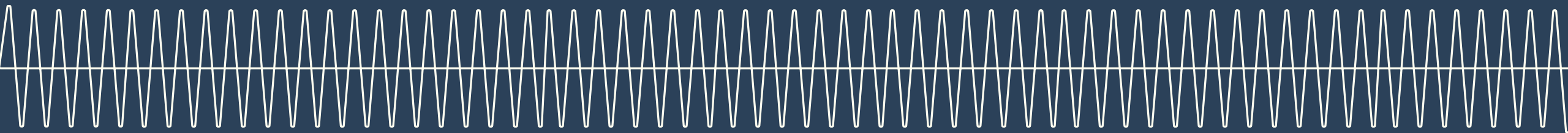
Distribution System Planning (DSP)

Angela Long, Manager, Distribution Resource Planning (DRP)

March 10, 2021 | Workshop 3



Meeting Logistics

- We are available at: DSP@pgn.com
- Teams Meeting
  - Please click the meeting link sent to your email or Click here to join the meeting
    - +1 971-277-2317 (dial this number into your phone for best results)
    - PW: 885 018 032#
  - Please use Microsoft Edge or Google Chrome with Teams as it will give you the best experience
  - During the presentation, all attendees will be muted; to unmute yourself via computer, click on the microphone that appears on the screen when you move your mouse
  - To unmute yourself over the phone, press *6
  - If you call in using your phone in addition to joining via the online link, please make sure to mute your computer audio
  - There is now a meeting chat feature rather than a Q&A feature. Pull this up on the menu bar when you move your mouse and look for the little message icon

Agenda

- Opening Remarks
- Community Engagement Plan: Community Facilitator Scope of Work Update
- Baseline Data and System Assessment: Example Datasets Update
- Hosting Capacity Analysis: Approach Update
- Long Term Plan: Approach Update
- Break
- Forecasting of Load Growth, DER Adoption, and EV Adoption: DER Potential & Flex Load Analysis – Phase 1
- Question/Next Steps

Proposed partner engagement timeline

		2021									
		January	February	March	April	May	June	July	August	September	October
Distribution System Planning (DSP) plan - Part 1	Baseline data and system assessment	Data collection, organization, QA/QC, and visualization				Present to partners for feedback	Iterate as necessary	Final draft shared with partners		PGE review process	Filed on Oct 15th
	Hosting capacity	System evaluation map and hosting capacity option analysis					Present to partners for feedback	Iterate as necessary	Final draft shared with partners	PGE review process	Filed on Oct 15th
	Community engagement plan	Development of the Community Engagement Plan							Present to partners for feedback	PGE review process	Filed on Oct 15th
	Long term planning	Development of long-term plan						Present to partners for feedback	Final draft shared with partners	PGE review process	Filed on Oct 15th

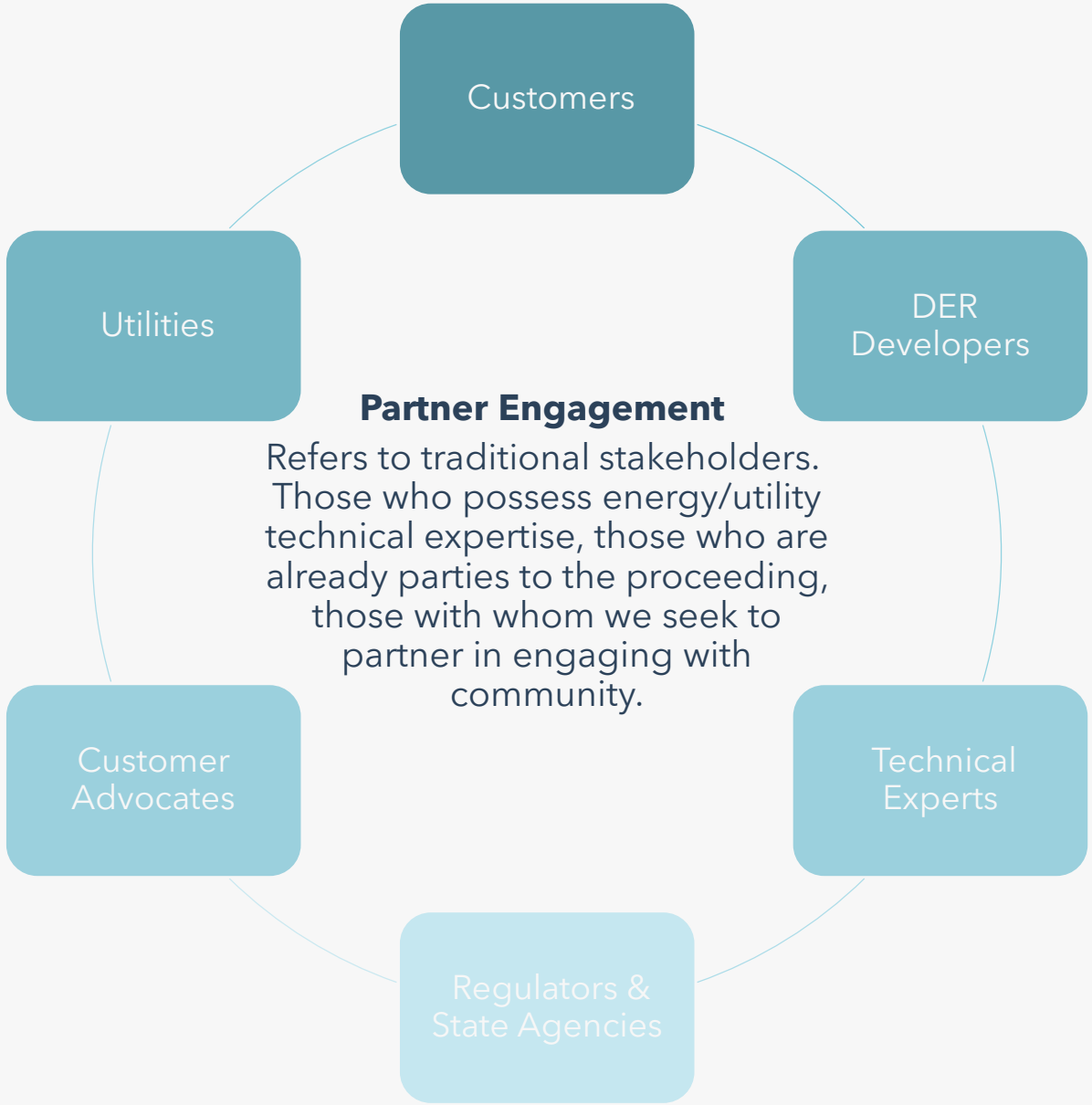
Community Engagement Plan Update

Our Engagement

Community Engagement Definition

In the context of the DSP, community engagement refers to the education and outreach to non-traditional stakeholders; those who have not historically had a seat at the table, those who have not historically been provided access or granted procedural equity, those who represent the Environmental Justice community.

This definition is a working definition which may evolve over time.



Initial Engagement Channels

Channel	Intended Scope	Timing	
Community Engagement Workshops – Best Practice ("Series A")	Non-technical: Partner with community facilitator (Unite Oregon) to conduct outreach, research and co-develop best practices	Monthly (April – June)	DSP Part 1
Community Engagement Workshops – Energy Education ("Series B")	Non-technical: Partner with CEP, NWEC and ETO to provide targeted energy education	Monthly (April – June)	
DSP Partner Workshops	Technical and Non-technical: Elicit Partner feedback	Monthly (Jan – Dec)	
Localized Community Meetings	To precede specific pilot project planning discussions	2022	DSP Part 2
OPUC Technical Working Group (TWG)	OPUC facilitated technical discussions	TBD	

Best Practice – Community Facilitator

DSP SOW Activities

Partner with CBOs and community members to **ensure EJ community representation** in CE workshops

Host/convene workshops in concert with targeted energy education provided by other Consultants

Convene workshops and conduct research to understand the six areas referenced in the DSP Guidelines and to understand gaps, disparities, needs, and opportunities relative to impacts from DSP

Analyze and synthesize community findings and present findings to PGE and community partners

Assist with **going beyond the minimum requirements** of UM 2005 by identifying and recommending innovative approaches to engaging in these planning efforts

Assist with **interpreting expressed community needs** (identified through community needs assessment or reviewing workshop input)

Feedback:

- **Recruit/Convene**
- **Needs/Impact Assessment**
- **Recommendations (how might we do this differently next time?)**

Research/Outreach Modes:

- Workshops (#hours?)
- Focus Group (n=?)
- Surveys (n=?)

Community Workshop Series

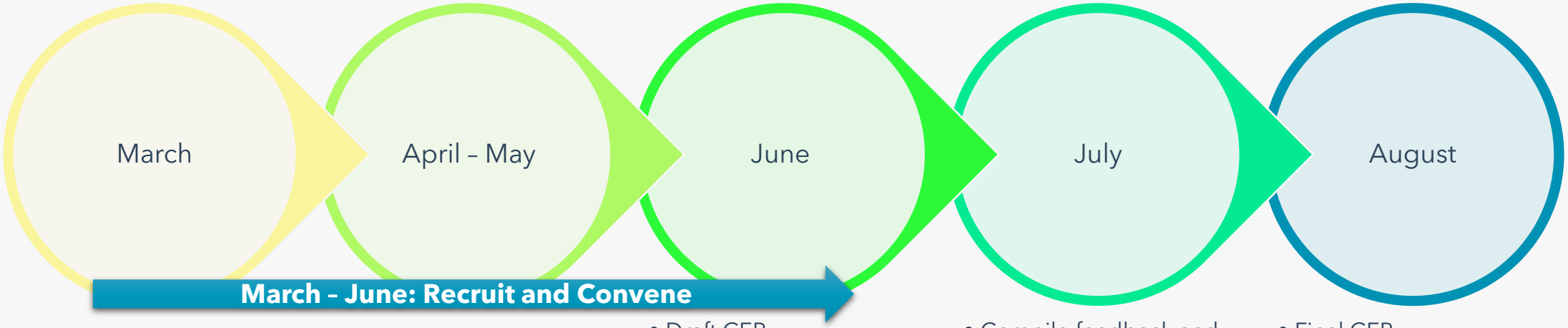
Series A: Best Practice

- Intent: Supports CEP development
- Activities: Recruit, Convene, Synthesize
- Scope /Timing:
  - Recruit, convene, and facilitate CE workshops series (March – May 2021)
  - Perform Community Needs and Impacts Assessment, informed by outreach and research activities (June 2021)
  - Develop Best Practices Community Engagement framework to support development of PGE's CEP (June – July 2021)
  - Develop Action Plan that provides findings and recommendations (July – August 2021)

Series B: Energy Education

- Intent: Support Best Practice workshops desire to foster meaningful engagement
- Activities: Translate and Inform
- Scope /Timing
  - Energy Education Needs Assessment, identifying gaps in education (March 2021)
  - Energy 101 + DSP 101 Educational Materials, addressing gaps inventoried in previous deliverable (March 2021)
  - Educational Workshops (April – May 2021)

Community Engagement Calendar



- **Community Facilitator secured**
- **Energy/DSP Education curriculum development partnership formalized**
- Recruit CBOs and community members to attend PGE's community engagement workshops

- Convene community

- Draft CEP
- Develop and present the CEP to community partners

- Compile feedback and review CEP

- Final CEP
- Present the finalized CE Plan at monthly DSP workshop

Updates since February Workshop:

- Shared and reviewed scope of work for Community Facilitator
- Convened energy/DSP education partners and drafted scope of work
- Flexible Learnings: Contracting with CBOs is a new process for both parties; different organizational cultures have different capacity and level of urgency; building trust and establishing a relationship is our priority

Baseline Data and System Assessment Update

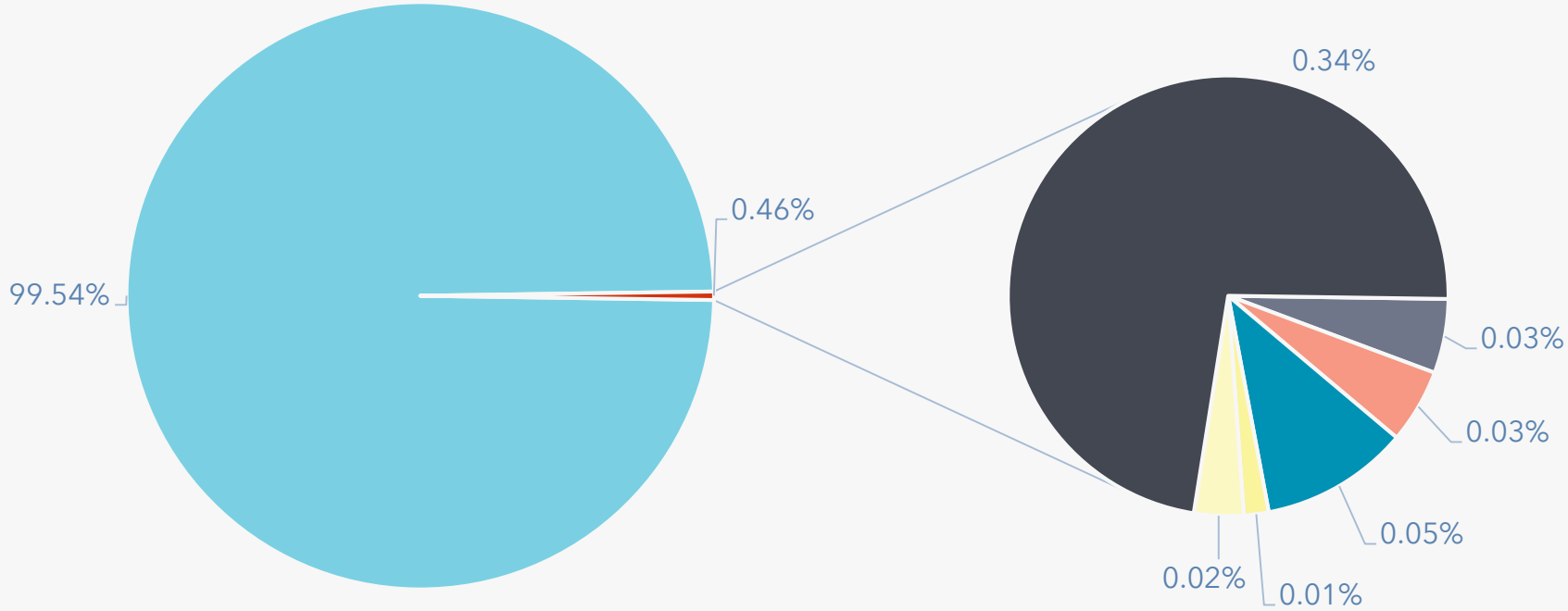
Distribution Definition

The Public Utility Commission of Oregon (OPUC) Distribution System Planning (DSP) initial Plan Guidelines will be the first stage in an evolving multi-stage process. OPUC Staff anticipates that the forming, filing, and acceptance of the initial Plans will educate all parties and identify areas for continuous improvement. PGE expects the evolution from the initial Guidelines to more advanced stages may change how the distribution system is defined, how investments are made, and even how investment costs are recovered. With this in mind and for the purposes of PGE's initial DSP, PGE is utilizing the definition below as a starting point for the initial DSP. This definition is expected to evolve as the DSP changes over time.

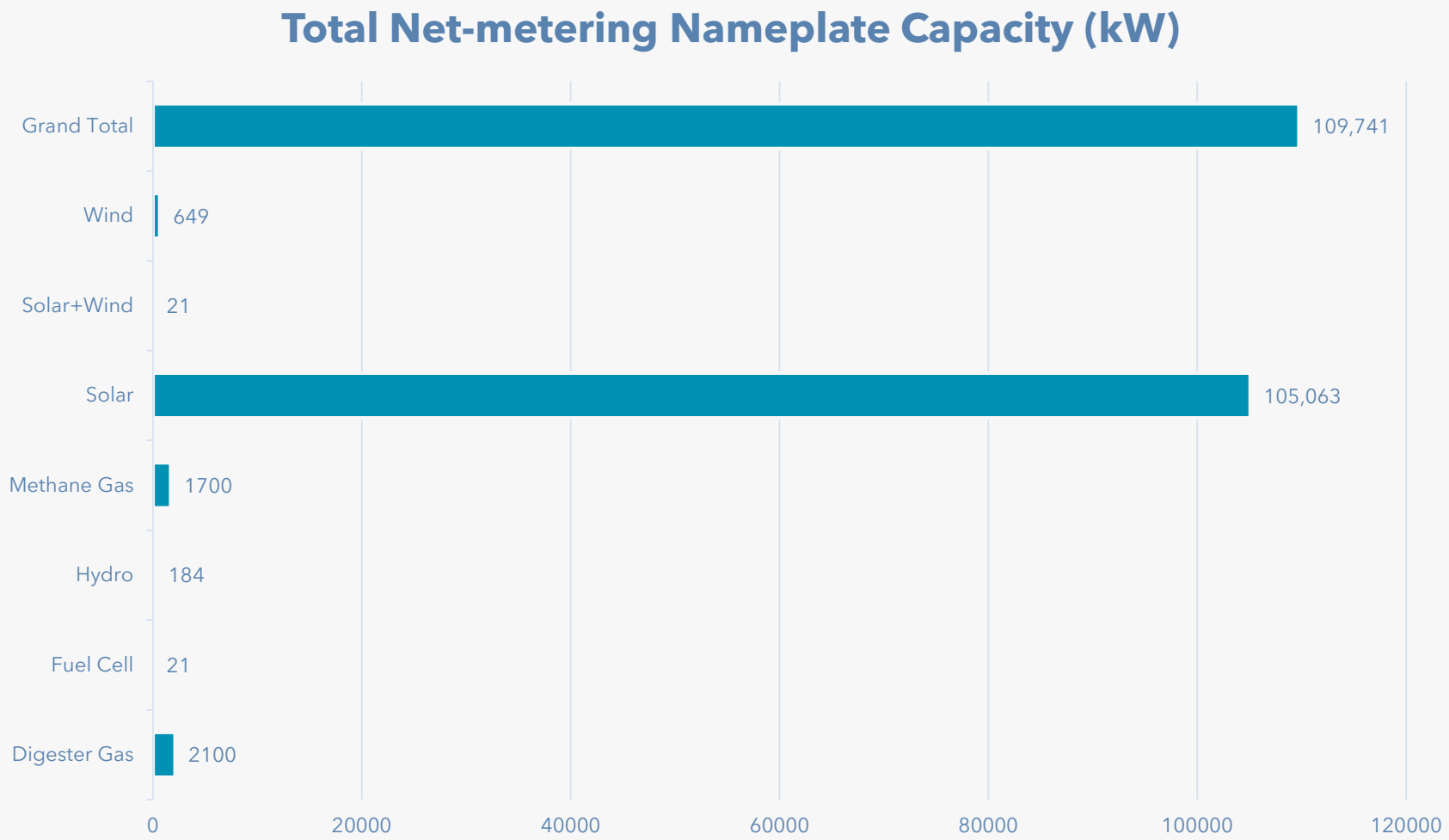
- ***The Distribution System is defined as load serving PGE owned equipment and lines at nominal voltage levels below 35kV. The distribution system starts at the high side disconnect of the substation distribution transformer and ends at PGE customer's service point.***
  - *We have one requirement (4.1.e – historical spending) that will be the exception to this definition due to transmission & distribution reclassification per OPUC Order 19-400.* https://apps.puc.state.or.us/orders/2019ords/19-400.pdf

Example Data Visual – 4.1.f.i.1

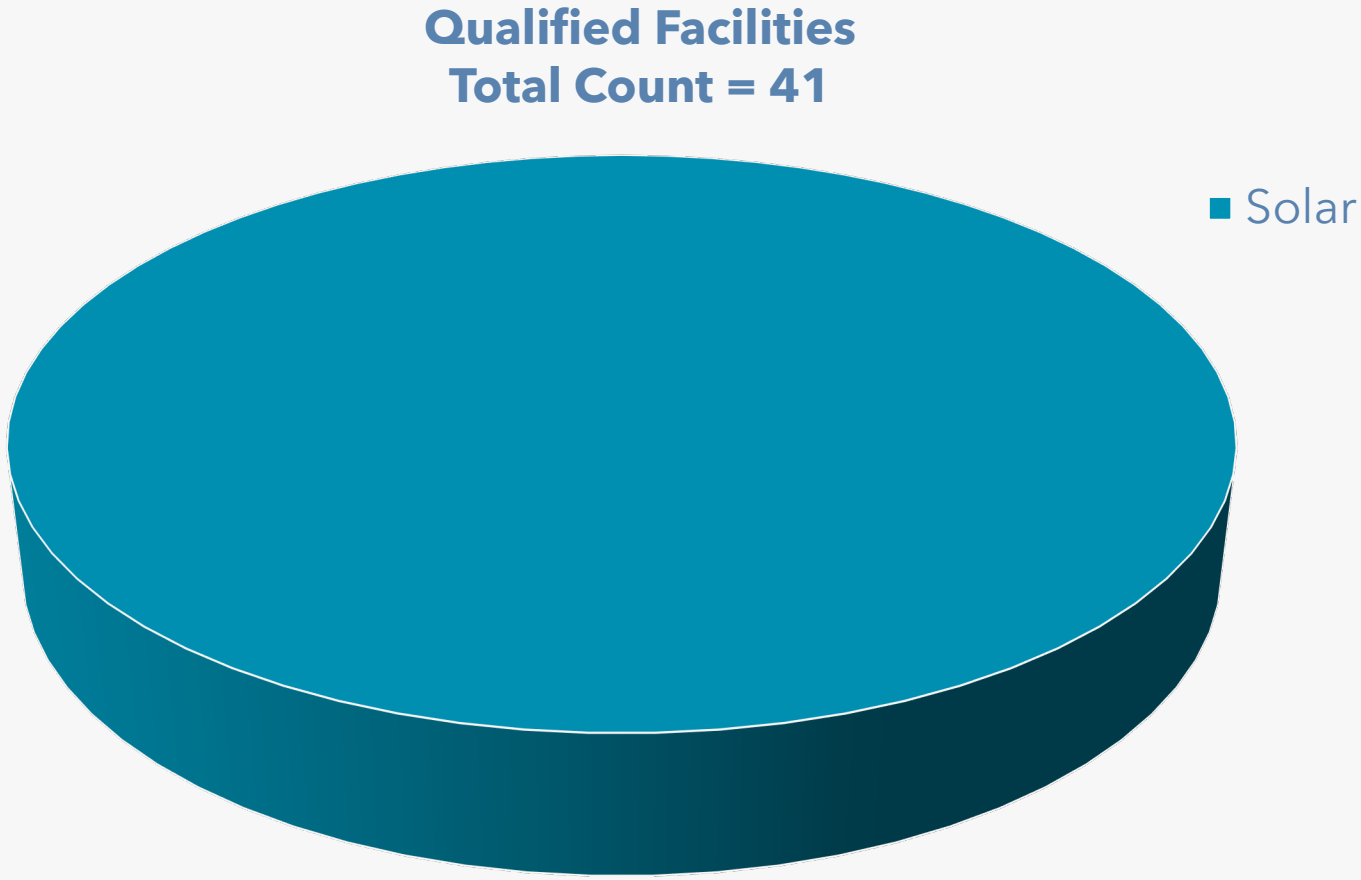
Type of Net-metering Generator
Total Count = 11,918



Example Data Visual – 4.1.f.i.2



Example Data Visual – 4.1.f.i.3



Example Data Visual – 4.1.f.i.4

Example Data Visual – 4.1.f.ii

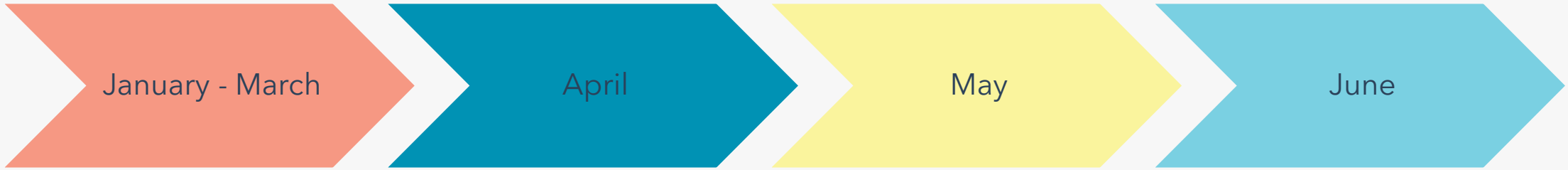
Net Metering Type	Count in Queue
Digester Gas	1
Methane	1
Solar	563
Total Count	565

Qualified Facility	Count in Queue
Solar	50
Total Count	50

Net Metering Type	Nameplate Capacity (kW) in Queue
Digester Gas	633
Methane	1200
Solar	10,019
Total	11,852

Qualified Facility	Nameplate Capacity (kW) in Queue
Solar	114,606
Total	114,606

Baseline Workstream Timeline



- Data collection
- Develop data visuals
- Write plan
- Present at monthly partner meeting
- Incorporate partner feedback
- Provide final document for inclusion in the DSP

Hosting Capacity Analysis Update

What Is Hosting Capacity?

The hosting capacity of a distribution feeder is the amount of distributed energy resources (DER) that can be accommodated without adversely impacting power quality or reliability under existing feeder design and control configurations.

Source: UM 2005 Workshop (oregon.gov)

The hosting capacity is an estimate of the amount of DER that maybe accommodated without adversely impacting power quality or reliability under current configurations and without requiring infrastructure upgrades.

Hosting Capacity | Con Edison

Applications of Hosting Capacity Analysis (HCA)

1

•Enabling DER Development

Enables DER developers to identify locations in a utility's service territory where interconnection costs are likely to be lower and to direct their investments.

2

•Enhancing Interconnection Application Processes

Help the technical screens for net metering application and other interconnection requirements. Help to determine when an application is likely to cause a violation related to voltage, thermal, or protection criteria.

3

•Advancing Distribution Planning Analytics

Enable utilities to identify when hosting capacity will become constrained and evaluate the impact of grid modernization investment, non–wire solutions, long term load and DER forecasting.

Hosting Capacity Analysis Runway

Crawl

– Conduct a system **evaluation to identify areas of limited DER growth**

– **Provide a plan to conduct hosting capacity evaluations**

- Plan may address alternate tool options that may **provide more approachable and instructive data for communities**

– **Initial Requirements**

- Update Net-Metering Map to include Public Safety Power Shutoff
- Conduct 3 Option Analyses (e.g., cost and timeline)

Walk

– If determined through Docket **UM 2111**, conduct hosting capacity analysis as an interconnection use case

– Include **distribution-level impacts to the substation and transmission system**.

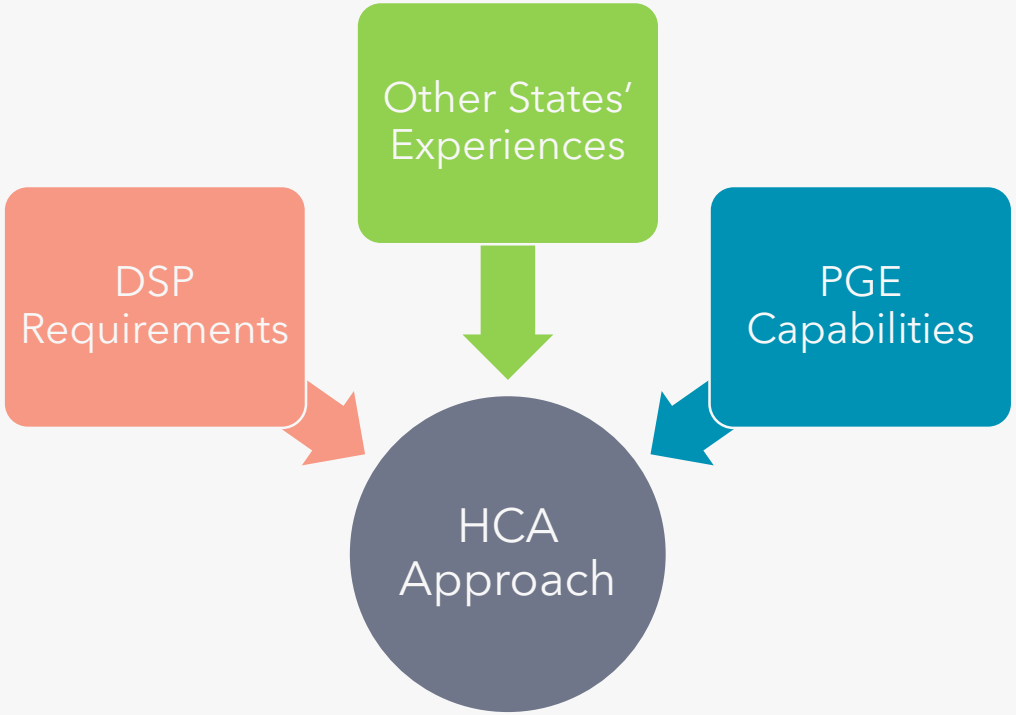
–Conduct **hosting capacity evaluations**

Run

– **Comprehensive hosting capacity evaluations**

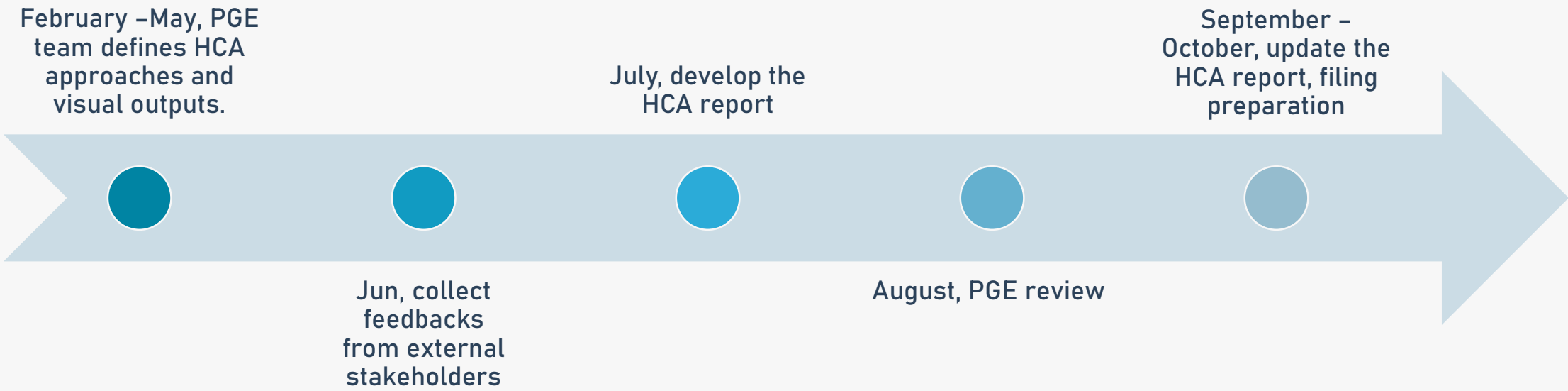
– **Increased level of detail** regarding distribution constraints, asset performance, and DER performance metrics **Address emerging technology development**

HCA Approach: Goals, Inputs and Considerations



- **Enable Decision Making** – support developer's siting/investment decisions and accelerate the Distribution Planning screens
- **Focus on DER Readiness** – ability to support DER integration, based on distribution system characteristics
- **Develop the Minimum Viable Product** – begin sharing distribution system characteristics ASAP to collect feedback from stakeholders and shape the conversation about level of HCA required
- **Evolve**: ADMS/DERMS dependency – ability to take advantage of granular (e.g., spatiotemporal) Hosting Capacity information is dependent on PGE's ability to communicate with and operate DERs

HCA Timeline



HCA Timeline (cont.1)

Crawl

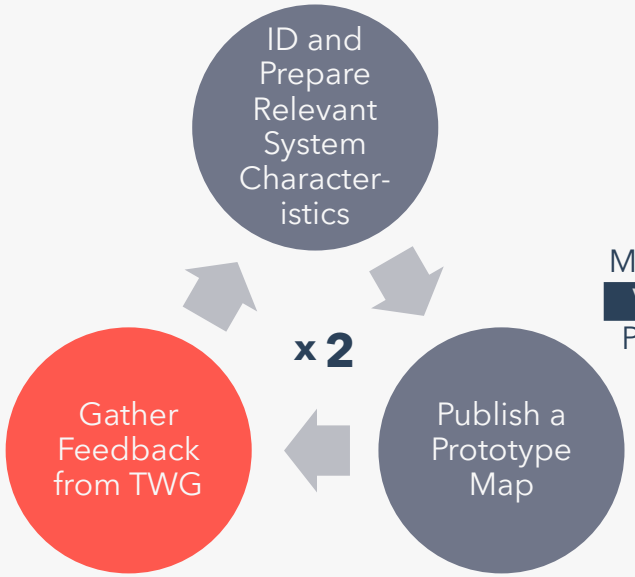
– Conduct a system **evaluation to identify areas of limited DER growth**

– **Provide a plan to conduct hosting capacity evaluations**

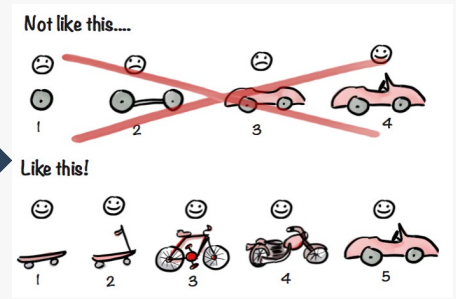
- Plan may address alternate tool options that may **provide more approachable and instructive data for communities**

– **Initial Requirements**

- **Update Net-Metering Map to include Public Safety Power Shutoff**
- Conduct 3 Option Analyses (e.g., cost and timeline)



Minimum Viable Product



Gather Stakeholder Feedback

DER Readiness 1.0

February –May, PGE team defines HCA approaches and visual outputs.

Jun, collect feedbacks from external stakeholders

HCA Timeline (cont.2)

Crawl

- Conduct a system **evaluation to identify areas of limited DER growth**
- **Provide a plan to conduct hosting capacity evaluations**
  - Plan may address alternate tool options that may **provide more approachable and instructive data for communities**
- **Initial Requirements**
  - Update Net-Metering Map to include Public Safety Power Shutoff
  - Conduct 3 Option Analyses (e.g., cost and timeline)

Long Term Plan Update

PGE thought process

What do we (society) want from our distribution grid? (objectives)

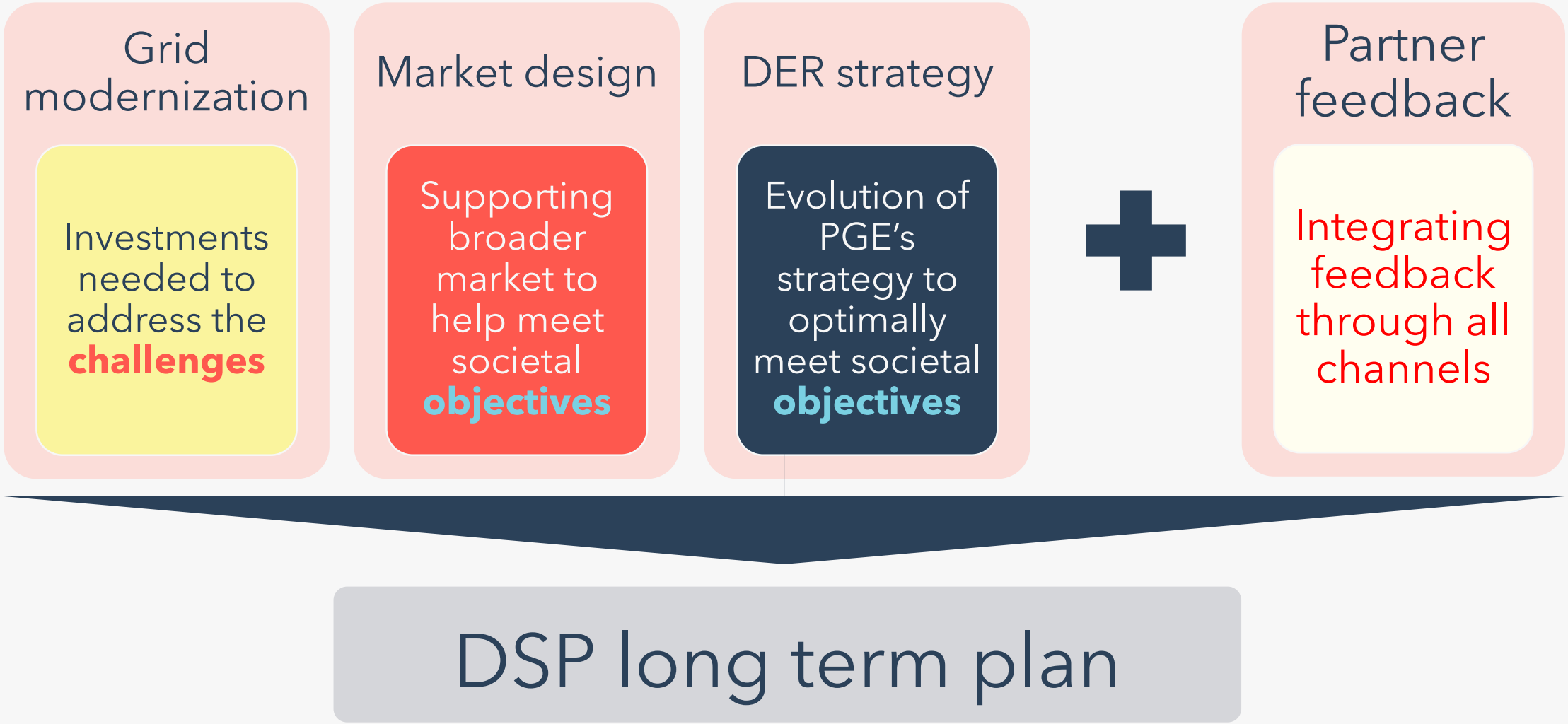
- Reliability, flexibility and resiliency
- More efficient and secure system
- Decarbonization
- Meaningful rate options and affordability
- Grid integration ease for DER developers and technology partners
- Equitable access and outcomes

What are the technical constraints? (challenges)

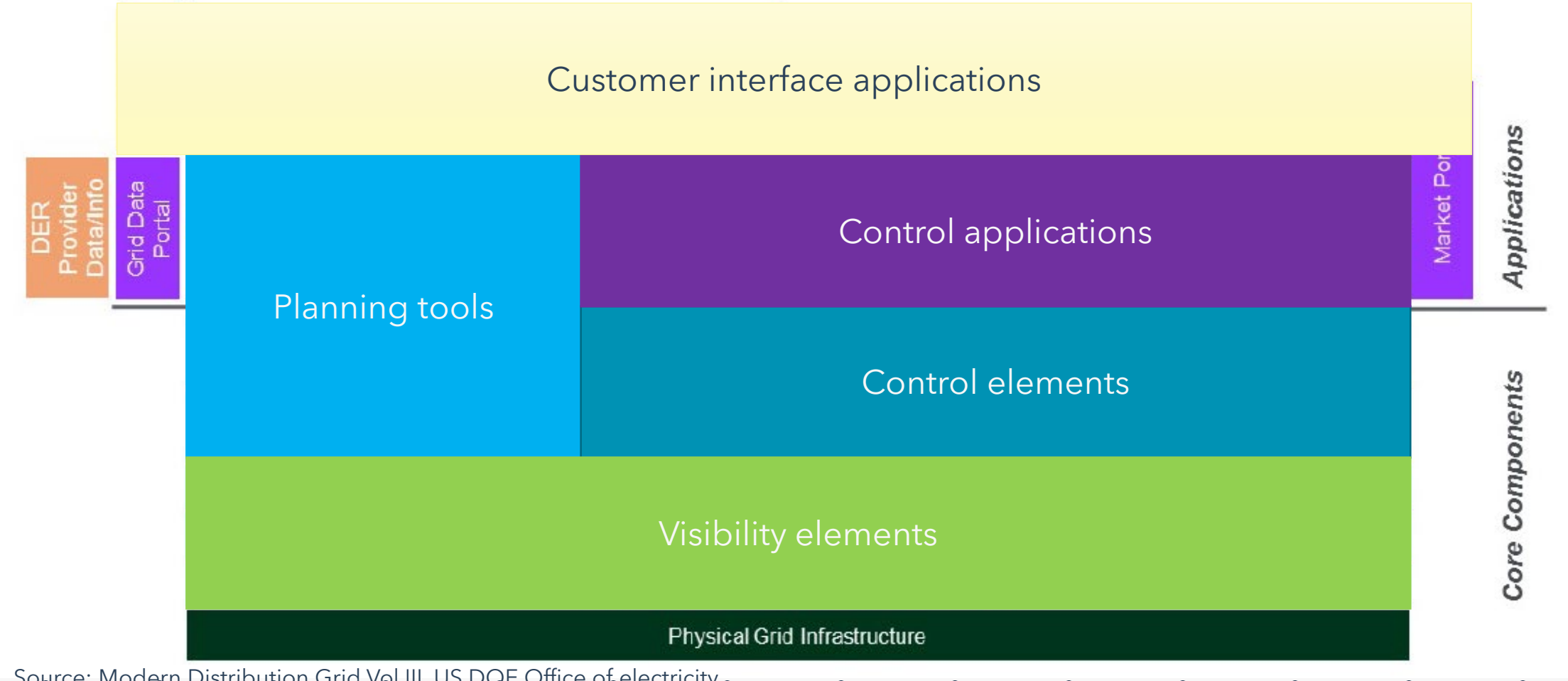
- Distribution system visibility and control
- Planning tools
- Data and analytics
- Current regulatory structure

Please raise your hand, chat, or email us with additional key objectives or challenges

PGE approach

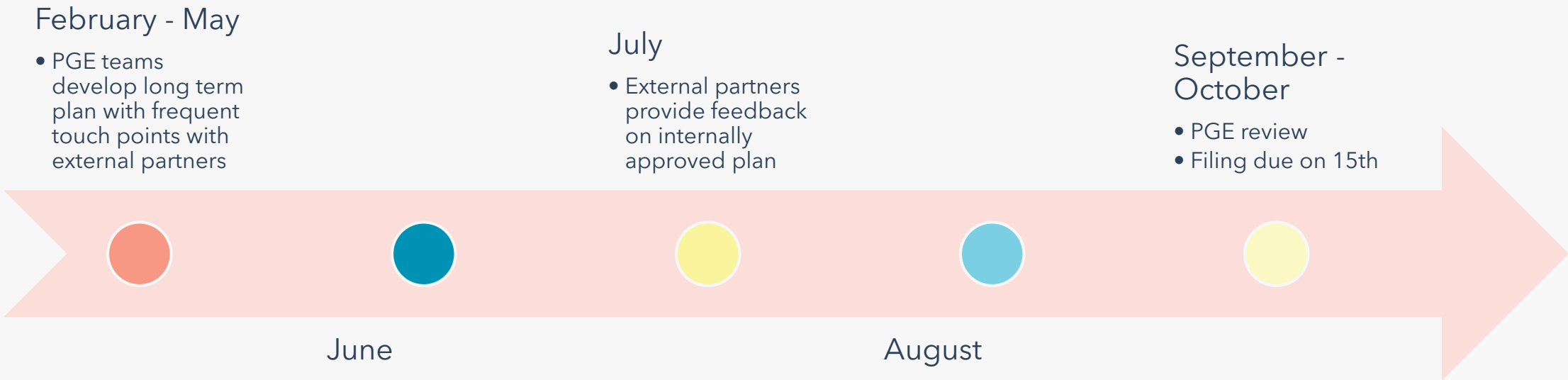


Overcoming challenges: Best practices



Source: Modern Distribution Grid Vol III, US DOE Office of electricity

Timeline


February - May
• PGE teams develop long term plan with frequent touch points with external partners
June
• Internal PGE approval process
July
• External partners provide feedback on internally approved plan
August
• Iterative updates to the plan with key external and internal partners
September - October
• PGE review
• Filing due on 15th

Let us learn together

PGE's understanding of best practices:

- https://gridarchitecture.pnnl.gov/modern-grid-distribution-project.aspx
- https://eta-publications.lbl.gov/sites/default/files/gmlc_bca_final_report_20210202.pdf

Examples from other utilities:

- Xcel Energy: https://www.xcelenergy.com/staticfiles/xe-responsive/Company/Rates%20&%20Regulations/IntegratedDistributionPlan.pdf
- CA utilities: https://www.cpuc.ca.gov/general.aspx?id=5071
- NY utilities: https://jointutilitiesofny.org/utility-specific-pages/system-data/dsips

DER Potential & Flex Load Update

Cadeo Presentation

Presentation attached.

Questions/Next Steps

Future Agenda Topics

April Meeting – 2.5 hrs

Updates on guideline requirements: 60 mins

- Community Engagement
- Hosting Capacity
- Long-term Plan
- Baseline Data & System Assessment

DER Potential & Flex Load Draft Results: 60 mins

Non-wires Alternative Draft Analysis & Results: 30 mins

May Meeting – 2.5 hrs

Updates on guideline requirements: 30 mins

- Hosting Capacity
- Long-term Plan

Community Engagement: 30 mins

Baseline Data & System Assessment: 60 mins

June Meeting – 2.5 hrs

Updates on guideline requirements: 30 mins

- Baseline Data & System Assessment
- Long-term Plan

Community Engagement: 60 mins

Hosting Capacity: 60 mins

Next Steps

Propose Meeting Topics

- Email us at **DSP@pgn.com** with suggested topics

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An

Oregon

Oregon

Oregon

Oregon

Oregon

kind of energy

PGE

Additional Material

Runway

Overview of February Meeting

Topics included:

Presentations:

- Distribution Planning 101: Derrick Harris
- DER Potential and Flexible Load Assessment: Andy Eiden

DSP Details:

- Project timeline and high-level overview of the requirements for the DSP: Nihit Shah
- Update on the community engagement plan: McKena Miyashiro

Topics of interest

- Work is in progress
- Completed
- Initial stages/under discussion

Transparency

- Monthly Partner Meetings
- DSP Timeline
- Workstream Updates
- DSP Abbreviations & Definitions
- DSP Website

Active involvement in the community engagement process

- Community Facilitator (discussed later in the presentation)
- More time for Community Engagement discussion

Stronger partnerships between customers and utilities

- Community Facilitator
- Community and Technical Workshops

Education because there is a steep learning curve for those without a utility background

- Distribution Planning 101
- DER Assessment
- NWA Update
- DER Forecast & Flex Load Update
- DSP for Non-Technical People

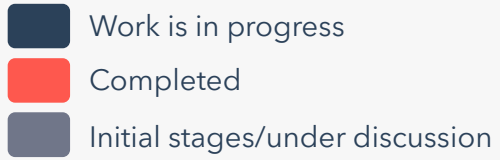
Usable, understandable mapping and website design

- Host Capacity Analysis
- DSP Website

Flexibility and innovation

- Evolving Agendas
- Community Facilitator
- Non-wires Alternative

Topics of interest



Diversity, equity and inclusion throughout the process

- Community Engagement Plan

Keeping disadvantaged communities at the forefront of the project planning

- Community Facilitator
- Non-wires Alternatives
- Data & Analytics

Geographic equity

- Hosting Capacity Analysis
- DER Potential and Flex Load Study
- Non-wires Alternatives

Role of building decarbonization

- DER Forecasting

Data gathering and reporting

- DER Forecasting
- Hosting Capacity Analysis
- Baseline Data and System Assessment

Keep costs down for rate payers when implementing climate change initiatives

- DER Forecasting
- UM 2099
- UM 2111

Parking Lot

Question/Comment	Partner	Name	Response
Will you be implementing a green button/utility API type solution for the interval data from customers?	Community Energy Labs	Tanya Barham	To be considered during DSP Part II in 2022

Appendix

DSP Abbreviations

ADMS = Advanced Distribution Management System

BIPOC = Black, Indigenous, and People of Color

C&I = Commercial and Industrial

CBO = Community-Based Organization

CE = Community Engagement

CEP = Community Engagement Plan

CTA = Consumer Technology Association

DCQC = Direct Current Quick Charge

DEI = Diversity, Equity, and Inclusion

DER = Distributed Energy Resource

DHP = Ductless Heat Pump

DR = Demand Response

DSP = Distribution System Plan

EJ = Environmental Justice

ERWH = Electric Resistance Water Heater

EV = Electric Vehicle

EVSE = Electric Vehicle Supply Equipment

HPWH = Heat Pump Water Heater

HVAC = Heating, Ventilation, and Air Conditioning

IRP = Integrated Resource Plan

kW = kilowatt

L2 = Level 2 EV Charging

LDV = Light-duty Vehicle

LIDAR = Light Detection and Ranging

MDHDV = Medium- and Heavy-duty Vehicles

MW = Megawatt

MWh = Megawatt-hour

NREL = National Renewable Energy Lab

NWA = Non-Wires Alternative

PTR = Peak Time Rebates

PV = Photovoltaic

SGTB = Smart Grid Test Bed

T&D = Transmission & Distribution

Tstat = Thermostat

TOU = Time of Use