Waiting Room

One moment please, while we wait for people to join

Song by artist:

Lumpy

Snorkel – Lumpy

Please use the QR code to check-in:
Name and Organization

Agenda

9:00 – 9:10 am - **Opening Remarks** (10 min)

9:10 – 9:30 am - **DSP Part One Updates & DSP Part Two Framing** (20 min)

9:30 – 10:15 am – **Current Distribution Planning Process** (45 min)

10:15 – 10:25 am - **Break** (10 min)

10:25 – 11:10 am – **Moving Toward a Future Distribution Planning Process** (45 min)

11:10 – 11:20 am - **Break** (10 min)

11:20 – 11:40 am – **Preparing for more DERs (specifically, rooftop solar)** (20 min)

11:40 am – 12:00 pm – **Next Steps and Open Questions & Comments** (20 min)

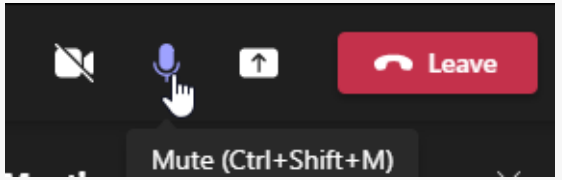
Meeting Logistics

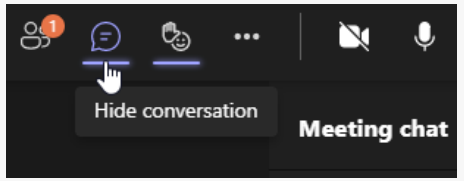
Teams Meeting

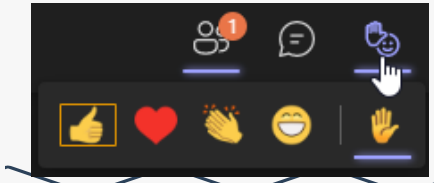
- Please click the meeting link sent to your email or Click here to join the meeting
  - +1 971-277-2317 (dial this number into your phone for best results)
  - PW: 885 018 032#
- Please use **Microsoft Edge** or **Google Chrome** with Teams as it will give you the best experience

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**
- Use the chat feature to share your comments and questions.
- Raise your hand icon to let us know you have a question







Quick Updates!

Please visit us at www.portlandgeneral.com/dsp

You can email us at: DSP@pgn.com

Online Feedback Form

Important dates:

- OPUC procedural dates
  - **Friday, Dec 10, 2021 – 9 am – 12:00 pm** (Pacific) - Staff workshop to receive public comment
  - **Thursday, Feb 24, 2022** – Special Public Meeting:
    - IOUs present DSP Part 1,
    - Staff make recommendation to the Commission, and
    - Commission considers Acceptance of Part 1 filings
- Monday, Aug 15, 2022 – DSP Part 2 filing date

DSP Partners Mailing List

We will be cleaning our DSP Partners Mailing list

You will receive a series of three emails
to opt-out of the mailing list

~~November 2021~~	December 2021	January 2022

DSP Mailing list: Sign-up form / Opt-out form

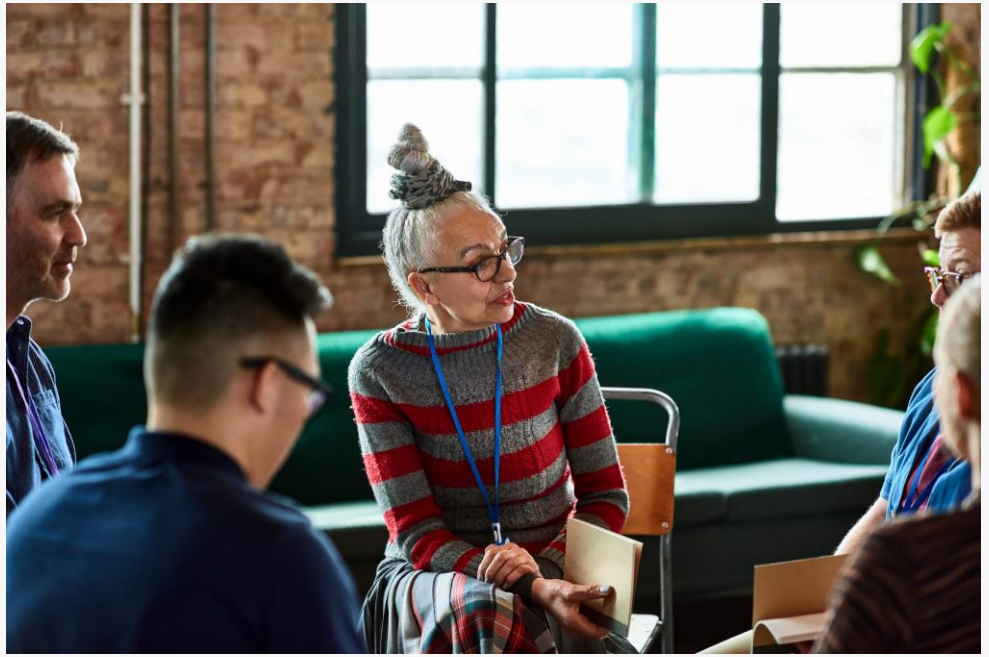
Operating Agreements

Establishing norms with our communities is foundational to building trust.

To create a **safe space**, we establish **common agreements** such as **respect** and **inclusivity**.

Practice curiosity and **seek to understand different perspectives**.

- **Stay Engaged**
- **Experience Discomfort**
- **Speak your Truth (knowing it's only part of the truth)**
- **Expect and Accept Non-closure**
- **Share the Airtime. Step up, Step back.**

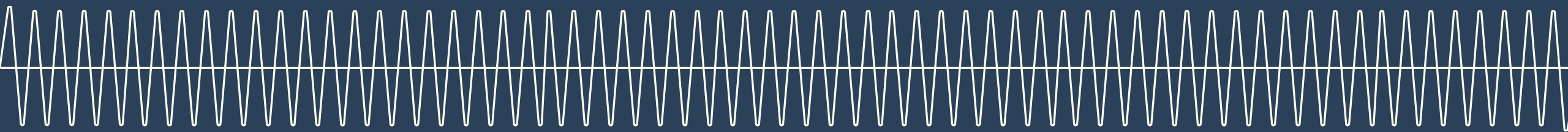


The courageous conversations framework
By Glenn Singleton and Curtis Linton

DSP Part One Updates

Angela Long, Distributed Resources Planning Manager

December 8, 2021



DSP Part One – Strategic Actions

Empowered communities	Modernized grid	Resilience	Plug and play	Evolved regulatory framework
• Human-centered Planning • Community Engagement Plan	• Customer ecosystem (data and access) • Virtual Power Plant VPP • Planning & Engineering tools • Grid Management Systems (ADMS, DERMS, OMS, DRMS) • Sensing, Measurement, and Automation (SCADA, CVR, FLISR) • Telecommunication (AMI, FAN, cellular) • Physical Grid Infrastructure (IOC, poles and wires) • Cybersecurity (firewalls, physical security)	• Customer Infrastructure (community resource centers) • PGE Infrastructure (Mt Hood Improvements) • Operational (End-to-end assessment process)	• Distributed generation map • Hosting Capacity Analysis (HCA)	• Key policy interactions such as: - HB 2021 (100% Clean) & - HB 2475 (Energy burden) • Key regulatory activities such as: - Cost-effectiveness & - Inverter-based DER generation

DSP Part One – 12.3.21 Written Public Comments

- Coalition of Communities of Color (CCC) / Verde / Institute for Market Transformation (IMT)
- Interstate Renewable Energy Council (IREC)
- Oregon Solar and Storage Industries Association (OSSIA) & Ocean Coast Energy Alliance Network (OCEAN)
- NW Energy Coalition (NWEC)
- Weave Grid
- Community Energy Project (CEP)

Thank you

Acknowledgement of DSP Part One – 12.3.21 Written Public Comments

Community Engagement

- "PGE has the power to change the tone and culture of those spaces and build trust with the entities with which they want to work." BUT…
  - It is not clear how we incorporated feedback and what changed in our thinking due to the partner input it received
  - Our intent was clear but lacked action

Hosting Capacity Analysis (HCA)

- We are moving too fast
- We need to have more discussion data is needed (e.g., day-time minimum load, socioeconomics and demographics
- RVOS is not the right cost-effectiveness tool
- Map should be updated to reflect use cases and partner feedback

Modernized Grid

- Spending should be focused on equity
- Discuss on spending is needed, specifically, if we expect costs to continue to rise in the future
- Discuss on "aging" investments is needed
- Need to ensure the system can accommodate EV impacts
- Need to discuss cost-effectiveness work approach

IRP and DSP Coordination

- DSP and IRP should be consolidated
- Load forecasting approach needs updated

Resilience

- Discuss on "hardening" investments is needed

Cybersecurity

- There are still data concerns that need addressed

DSP Part Two Framing

DSP Part Two Requirements Summary

Due August 15, 2022

Forecasting of Load Growth, EV/DER Adoption

- Describe **current state for Load Forecast** – process, tools, data
- DER/EV:
  - Forecast methodology and geographic allocation
  - **Adoption by substation** - high/med/low scenarios
  - Forecast of load growth and adoption

Grid Needs Analysis

- Document process to assess grid adequacy and identify grid needs
- Discuss criteria used to assess reliability and risk – methods and modeling tools used
- **Present prioritized constraints publicly**, including prioritization criteria and timeline to resolve constraints

Solution Identification

- Document process for identifying the range of solutions to address grid needs
- **For each need, describe the data used to support investment decisions**
- For large projects, describe process for engaging communities and getting input
- **Propose 2 NWS pilot projects**

Near-term Action Plan (2-4yrs)

- Provide 2-4 yr. plan to address grid needs
- **Disclose planned spending, timeline and recovery mechanism**
- Discuss relationship between planned investments
- Discuss pilots being conducted to enhance the grid

Goals of DSP Part Two

Community Engagement

- Two-way flow of information
- Co-created education material
- Continued partnerships with community experts

Metrics & Data

- Resilience metrics for customer and utility
- Socio-economics
- Demographics
- Cost-benefit analysis

DER Resource Planning

- **Climate risk modeling**
- **Decarbonization**
- **NWS, Locational**
- DEI/Equity
- Estimated impacts of electrification adoption

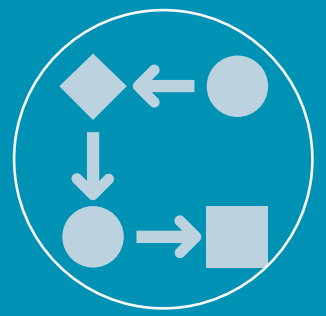
Portfolio Analysis

- Cost-effective DER
- Environmental and social justice community
- Resilience/Outage
- High DER adoption

High Level – Project Timeline

Planning: Developing the approach to address Part 2 requirements

Oct – Dec 2021



Executing: Co-creating an inclusive Distribution Planning process

Jan – May 2022

Reporting: Documenting the process changes and the plan to enact them

Jun – Aug 2022

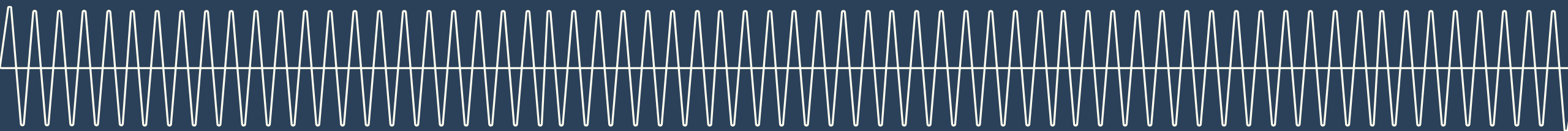
Filing DSP Part 2

Aug 15, 2022

Current Distribution Planning Process

Jennifer Galaway, Distribution Planning Manager

December 8, 2021

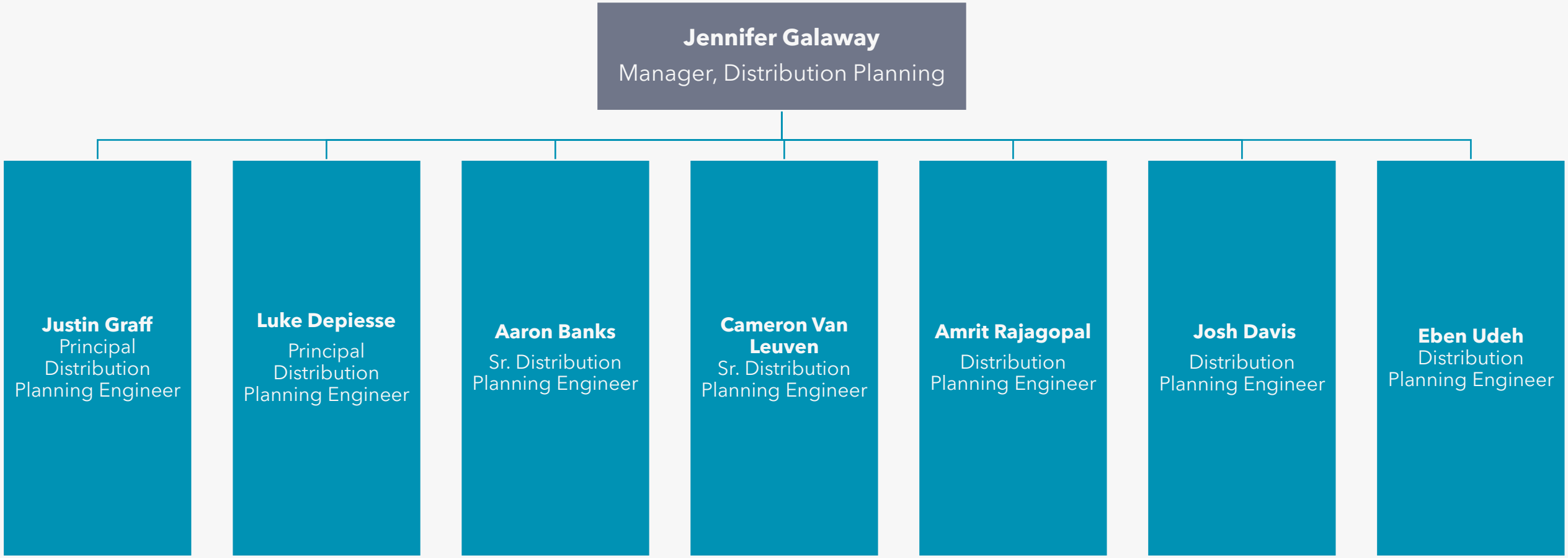


Objective

Full transparency into our current distribution system planning process

Provide for meaningful input from partners by exploring our planning process together to determine where we could enhance or improve

PGE's Distribution Planning Team



Distribution Information

Service Territory

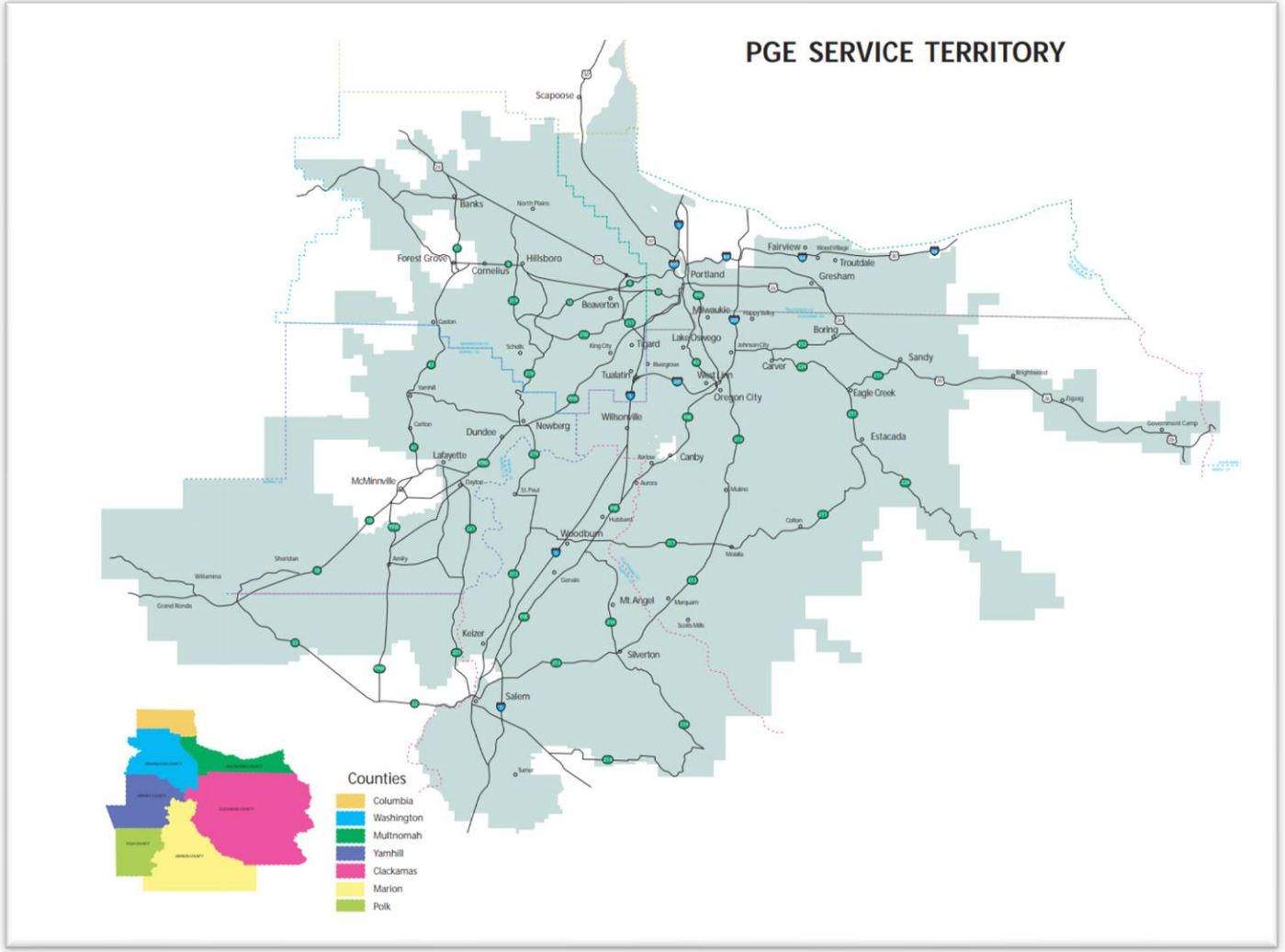
- 1.9 million population
- 4,000 square miles
- ~900,000 customers

Big Equipment

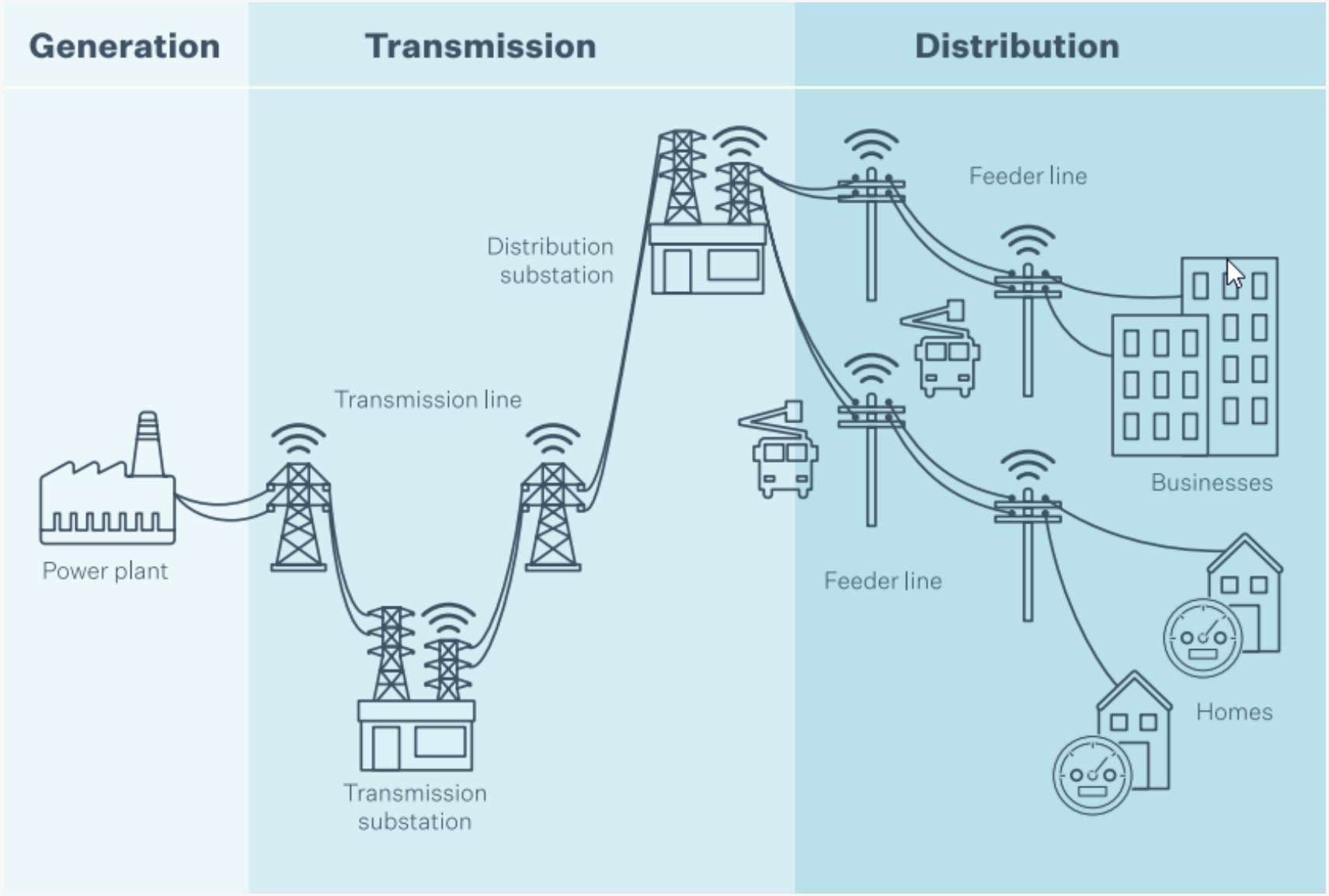
- 153 Substations
- 270 Power Transformers
- 695 Feeders

Net System Peak Load

- Summer: 4,441 MW
- Winter: 4,073 MW



The Grid


Generation
Transmission
Distribution
Feeder line
Distribution substation
Transmission line
Businesses
Power plant
Feeder line
Homes
Transmission substation

Distribution Planning Expected Results

Goals

- Enhance **safety**
- Increase **reliability**
- Meet **customer needs**
- Meet **standards/requirements**
- Recommend best **solutions**
- **Reduce risk** (likelihood x consequence)

The Seven Steps of the Current Planning Process

1. 

   WHAT IS THE PROBLEM

2. 

   WHERE IS THE PROBLEM LOCATED

3. 

   FINDING SOLUTIONS

4. 

   WHAT ARE THE LIMITATIONS TO THE SOLUTIONS

5. 

   WHAT ARE THE BENEFITS AND RISKS OF THE SOLUTIONS

6. 

   ARE THERE ADDITIONAL IMPACTS TO THE SOLUTIONS

7. 

   RECOMMENDATIONS

Step 1: What is the problem?

Determine **why the system needs to be upgraded to meet future needs (Identification Stage)**

Identification Tools

Analysis

Feeder Load (System Weak Link Report/Minimum Load): Indicates equipment and conductors approaching certain limits or thresholds

Reliability: Focuses on trouble spots in the distribution system based on historic outage events

Assessment

System Assessments: Indicates potential problematic areas when the system is most stressed

Modeling

Asset Risk Models: Identifies and quantifies risk related to certain equipment

Drivers

- Economic development
- Load growth/Forecasts
- Lumped load additions
- Modernization
- Policy regulatory requirements
- Safety
- Substandard equipment
- Urban growth boundary expansion
- Zoning changes

Step 2: Where is the problem located?

Area affected by the problem

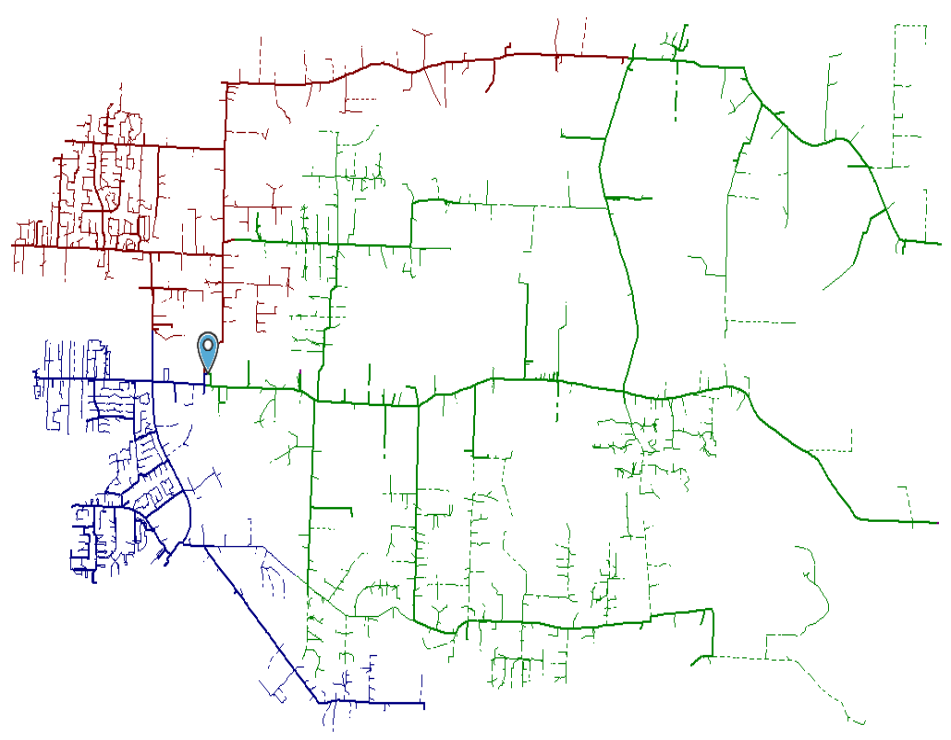
Review:

- Geographic boundaries
- Affected customers
- Contractual obligations
- Approach to contingency analyses

Forecasting parameters

Load profiles/Allocation

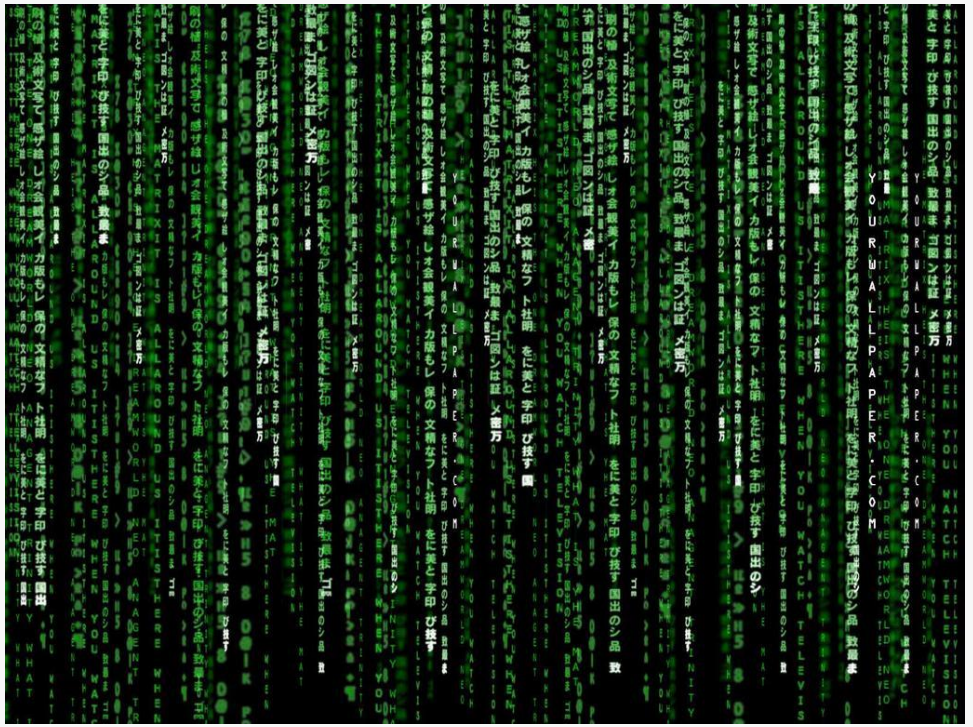
Setup models



Step 3a: Finding Solutions: *Current State Analysis*

Software simulation will further **define severity** of the **problem area** and **identify additional issues**

- Coordination issues
- Conductor loading violations
- Contingency analysis deficiencies
- Faulted equipment violations
- Load balancing / High neutral current
- Protection-related issues
- Voltage violations



Step 3b: Finding Solutions: *Solution Analysis*

Traditional

- Plan to peak
- Wired solutions
- Reliability-based
- Emissions agnostic
- Routine analysis
  - ✓ Reconductors
  - ✓ Substations
  - ✓ Voltage Regulators

Non-Traditional

- Plan to cycle(s)
- **Non-wires Solutions (NWS)**
- Flexibility
- Net-Zero emission targets
- Complex analysis
  - ✓ Automation
  - ✓ Demand Response
  - ✓ Inverter-based tech
  - ✓ Microgrids

Step 4: What are the limitations to the solutions?

Solutions

Do They Satisfy:

- **Problem Statement**
- Additional discoveries during **finding solutions** ***current state analysis***

Do They Meet:

- **Customer/community** needs
- **Regulatory**/compliance guidelines
- **System** needs under:
  - ✓ normal conditions
  - ✓ contingent conditions

Are They:

- Optimal
- Constructible

Is duration of short-term/intermediate option valid

Step 5: What are the benefits and risks of the solutions?

- Benefit vs Cost
- Risk reduction on assets and non-assets
- Stacked benefits
- Savings
- Improve resilience
- Reduce outage duration/ frequency

Step 6: Are there additional impacts to the solutions?

Impacts

Community, Customer & Environmental

Safety

Personnel & Public

Complexities

Construction sequencing

Introduction of newer technologies

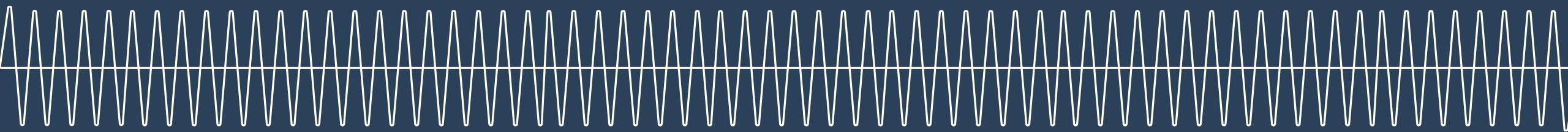
Portable equipment scheduling

Newer concepts/procedures

Leads to Step 7

Final Recommendation(s)

Moving Toward a Future Distribution Planning Process



Community Engagement

Angela Long, Distributed Resources Planning Manager

December 8, 2021

Engaging Our Communities

Our objective is to foster **procedural equity and ensure diversity of voice** in the DSP planning process.

To accomplish this, we will continue to partner with Community-based Organizations (**CBOs) and other organizations that have longstanding relationships and establish trust in environmental justice communities** to:

- Co-develop solutions for NWA pilot projects
- Co-create community workshops to identify community energy needs, desires, barriers and interest in clean energy planning and projects
- Co-develop community education around key DSP practices and relevant energy related concepts

Where Are We?

Hiring: Community Engagement & DEI Manager/Coordinator

Third Party Engagements: Climate modeling, decarbonization and equity analysis for location DER forecasting

DEI Advisory Boards: Identification of community groups through existing regional efforts

New Equity Tools: Greenlink Equity Mapping (GEM) and Low-Income Affordability Data (LEAD) Tool

NWS

- Developing non-wire solution (NWS) policy and procedures (P&P) document
- Meet with Verde and Institute for Market Transformation (IMT) to discuss goals of empowering communities through NWS
- Testing hourly modeling tools in CYME to facilitate evaluation of DER's contribution to mitigating range of grid needs
- Begun development of economic assessment model needed to account for partial deferral of traditional investment under an NWS

DRAFT - Community Engagement for Non-wire Solutions (NWS) Pilot Project Proposals

	Steps	Timeline	Audience
1	**Education & Listening Session** Defining NWS, location, solution types, process, implementation	December 8, 2021	All - Partner Workshop
2	**Non-wires Technical Education & Listening Session** Draft criteria for prioritizing projects and screening of NWS	January 12, 2022	All - Partner Workshop
3	**Community Workshop Brainstorming** Development of community definitions and priority areas	January 31, 2022	All
4	**Non-wires Technical Reiteration Session** Draft final criteria for prioritizing projects and screening of NWS	February 9, 2022	All - Partner Workshop
5	**Community Workshop Education** Identification of existing projects with analyses identifying opportunities for NWS	February 28, 2022	EJC
6	**Non-wires Technical Listening Session** Identification of existing projects with analyses identifying opportunities for NWS	March 9, 2022	All - Partner Workshop
7	**Community Workshop Brainstorming** Finalization of prioritized project list - ACTION REQUESTED	March 31, 2022	EJC
8	**Non-wires Technical Information Session** Notice of finalization priorized project list	April 13, 2022	All - Partner Workshop
9	**Community Workshop Brainstorming** Identification of pilot projects with analyses identifying opportunities	April 29, 2022	EJC
10	**Non-wires Technical Non-wires Technical Information Session** Identification of pilot projects with analyses identifying opportunities	May 11, 2022	All - Partner Workshop
11	**Community Workshop Recommendation** Recommended two pilots concepts - ACTION REQUESTED	May 20, 2022	EJC
12	**Non-wires Technical Information & Feedback Session** Final recommended two pilots concepts	June 8, 2022	All - Partner Workshop





Non-wires Solutions (NWS): Definitions, Solutions & Locations

Andy Eiden, Distribute Resources Planning,
Principal Analyst

DSP – Part 2

PGE

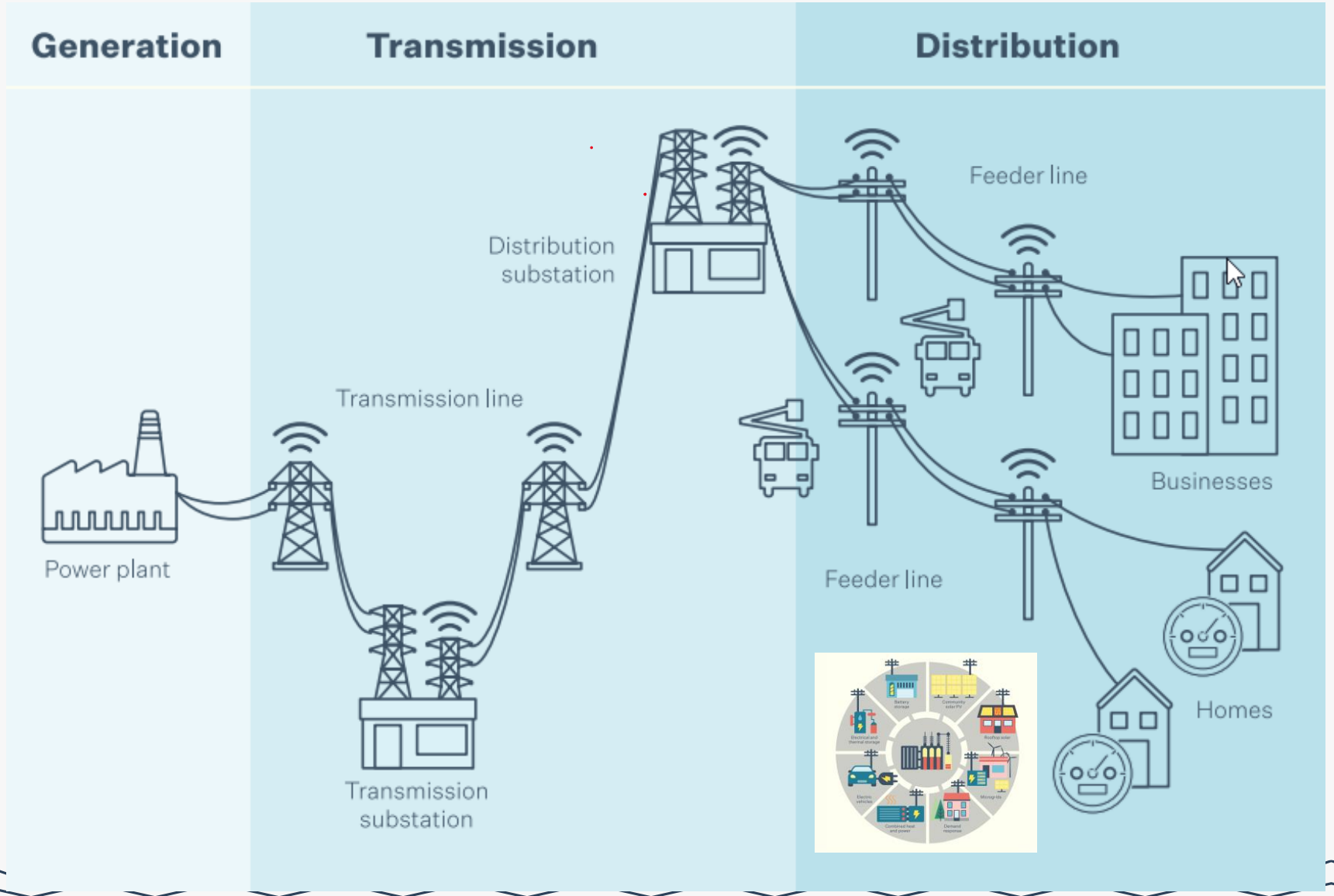
Purpose of Update

What we hope to gain from today's update on Non-wires Solutions (NWS)

Information sharing (where we are, definitions, process proposals)

Gather feedback and input on how to define and incorporate new metrics for prioritizing NWS projects

Grid of the Future



Non-wires Solutions (NWS)

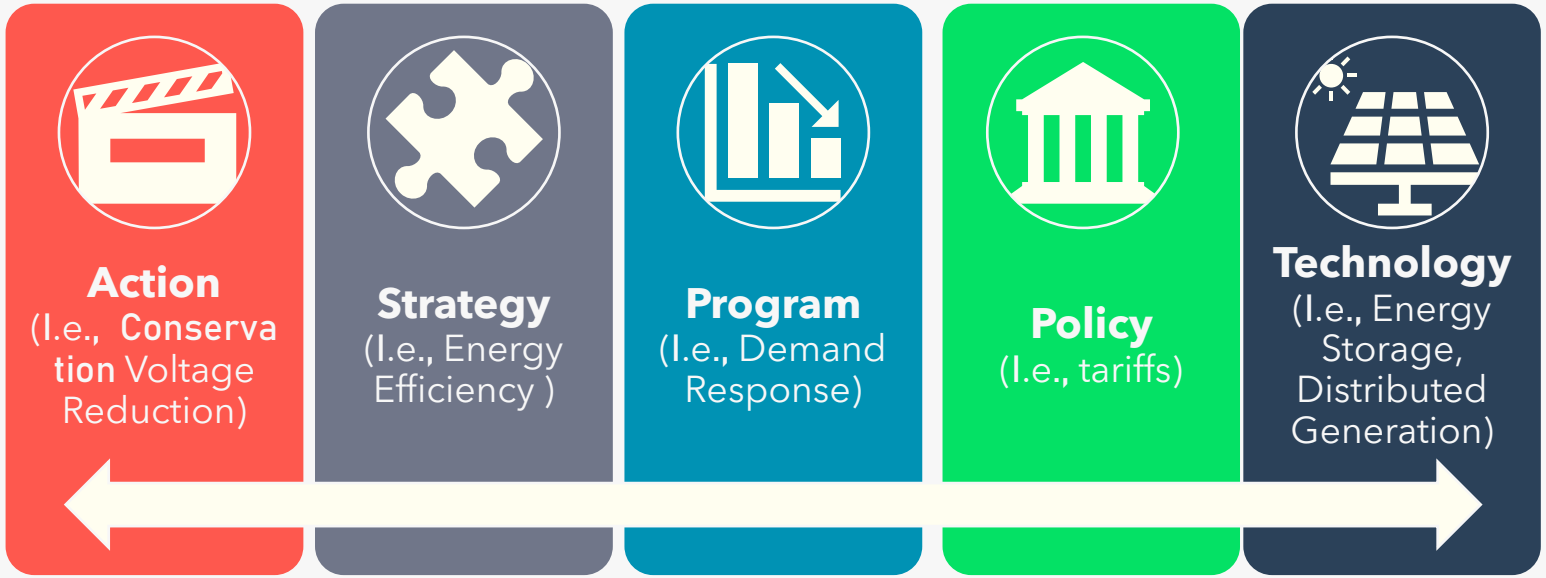
Definition

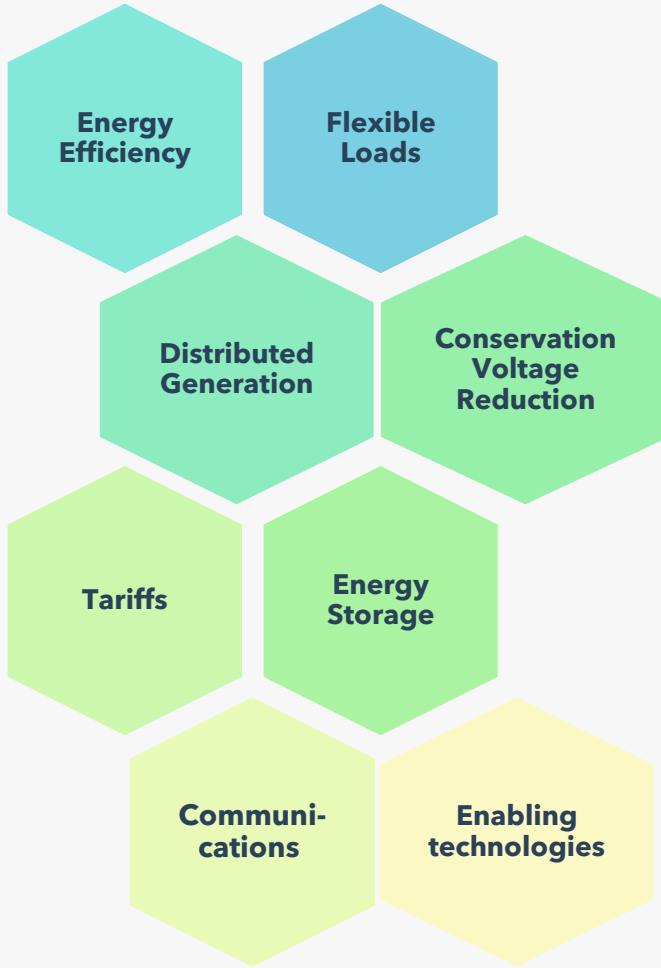
- An **investment** intended to **defer**, **reduce**, or **remove** the need for a **specific wired solution** in a specific geographical region to mitigate an identified grid need such as risk of thermal overload, voltage violation, and/or other wide-ranging grid needs.

Location

- An NWS can be located at the transmission system, sub-transmission system, distribution system, and/or a customer site. We will focus on distribution and customer-sited NWS.

Solution Types





A Non-wires Solution (NWS) can include any action, strategy, program, policy, or technology that meets the definition and solution requirements.

NWS projects can include individual investments or a combination to meet the specified need in a cost-effective manner, considering the need to meet state policy goals, ensure compliance, or enhance the customer experience.

NWS to Solve a Problem

PROBLEM

Load growth at the end of a feeder exceeds the capacity of the existing utility system.

CONVENTIONAL RESPONSE

Upgrade the feeder or build a new substation to accommodate the increased load.

The Downside:

Expensive distribution-infrastructure upgrades in densely populated areas take years to complete.

NON-WIRES ALTERNATIVE

Create demand-response + energy-efficiency programs coupled with existing distributed energy resources (DERs).

Why It's Better:

Manages peak demand to accommodate load growth.

Source: https://www.sandc.com/en/solutions/non-wires-alternatives/

NWS Screening

Larger Job Type

- Typical lead time > 2 years to design and construct
- Cost of project is typically higher (>$1 million)
- Geographic footprint is likely to cover a larger area

Smaller Job Type

- Typical lead time 9 months to 2 years to design
- Cost of project is typically lower (<$1 million)
- Geographic footprint is also likely to cover a smaller area than a large project

Grid Needs

Forecasting Certainty

Lead time

Project Costs

Community Engagement (notify community)

Aligning Grid Needs with NWS

Grid need type	Example of traditional solution	Example NWS product and/or service
Load growth driven thermal capacity upgrade projects or (N-0) capacity projects	• Substation transformer capacity upgrade • Reconductoring of circuit • Build new feeder	• DERs that can reliably shape or be dispatched to alleviate existing or forecast peak load on the distribution circuit or at substation transformer
Reliability solutions driven by N-1 contingency requirements	• Substation transformer capacity upgrade • Reconductoring of circuit • Build new feeders	• DERs that can be reliably dispatched to provide contingency relief at a requested time, duration and/or frequency. • Distribution automation
Hosting capacity and volt-VAR improvements	• Capacitor banks • Change load tap changer settings • Line voltage regulators • Protection Upgrades (Hot Line Blocking, 3V0 Protection) Phase balancing	• Smart inverters and batteries could be used to provide volt-var and Conservative Voltage Reduction (CVR) services, supporting power quality, reducing losses and net energy consumption on the feeder
Resiliency upgrades: new supply paths for increased resiliency	• New substation or feeders • New switching points or tie lines • Reconductors • Substation Upgrades	• Microgrids for back-up power during grid and/or wildfire related emergencies. • Distribution automation

Community Engagement Principles

Engagement

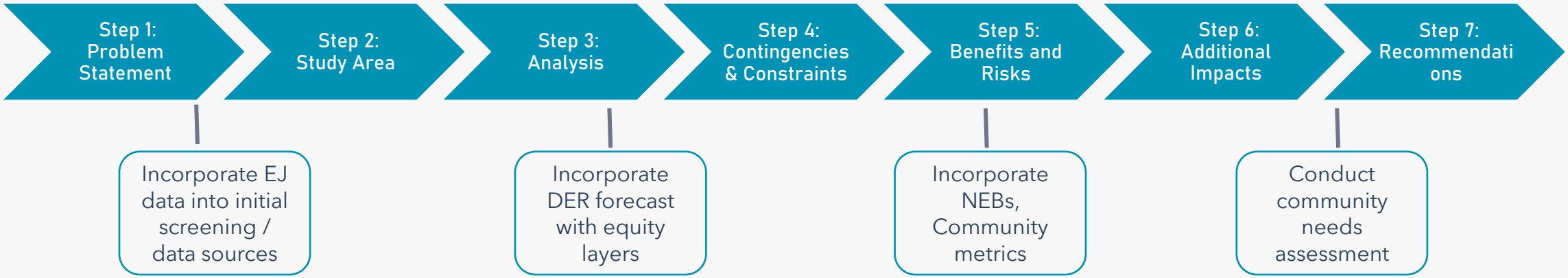
- Develop relationships and channels for communication with local communities
- Share potential NWS project information
- Work with the community to understand preferences
- Incorporate community preferences
- Survey customers after implementation of NWS to learn and improve the process
- Engage customers in an approachable, fully accessible manner
- Empower all customers with authentic choices

Development of NWS

- Create inclusive and equitable access to opportunities across customer types, with particular attention to opportunities that reduce energy burden
- Create procedural inclusion for new stakeholders who are traditionally not represented
- Promote collaboration between utilities and community-based organizations (CBOs) to broaden perspectives and representation in planning processes and outcomes

Adding Community Lens to Planning

- We aim to include a community lens to our work within a variety of channels
- Open to feedback as to which touch points are appropriate or desired, and what content of each should be



NWS Development Process

Resource Contribution

- Determines which resources or Solution Types are applicable to address

Resource Supply Curve

- Determines the potential capacity or energy contributions of a resource of a given length of time

Integrating NWS solutions with CYME

- NWS solutions are integrated with CYME through modified load profiles

Solution Approaches

- Existing/new PGE, Energy Trust, or third-party programs
- Partnership / hybrid solution approach
- RFP

Cost Benefit Analyses

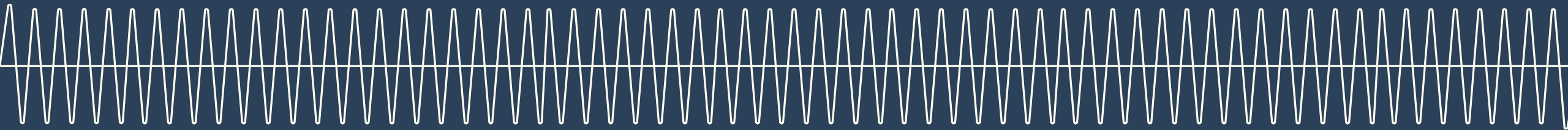
- Lifecycle Cost of Ownership
- Benefit Cost (B/C) Ratio
- Near-term Risk
- Near-term Customer Interruptions (CI)
- Near-Term Customer Minutes Interrupted (CMI)

10 Minute Break

Preparing for more DERs (specifically, rooftop solar)

Joe Boyles, Distributed Resource Planning, DSP Project Designer

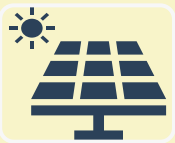
December 8, 2021



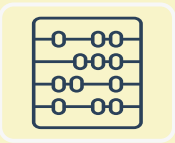
Understanding How Much Generation There Is

Problems (potentially outages) are created when a large amount of customer-sited generation decreases over a short period of time, e.g., at sunset

PGE needs to know how much generation is being produced to anticipate how much energy might need to be supplied by the utility in the event customer-sited generation suddenly drops off



PGE does not require installation of monitoring devices with customer-sited generation



Disaggregation is a process we use to derive how much active generation there is

We're evaluating tools that will enable us to effectively perform disaggregation

Preparing for More DERs

We're reviewing

- Design standards across the country to understand how other utilities are managing DERs
- Our standards to identify opportunities/gaps

Evaluating System Impact of More DERs

- How much capacity do we have and where (HCA)
- Where/how do we expect the system to break
- What options do we have to proactively address weak points
- What regulatory changes are required to support options

Next Steps

DRAFT Agenda for 2022

January	February	March
• DSP Updates • DER Forecasting & Adoption • NWS • Community Engagement	• DSP Updates • DER Forecasting & Adoption • Current & Future Grid Needs Identification Process • NWS • Interconnection • Community Engagement	• DSP Updates • DER Forecasting & Adoption • Current & Future Grid Needs Identification Process • NWS • Interconnection • Community Engagement

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Let's meet the future together.