

Strategic Initiative: Pathways to Decarbonization

BOD Update October 2021

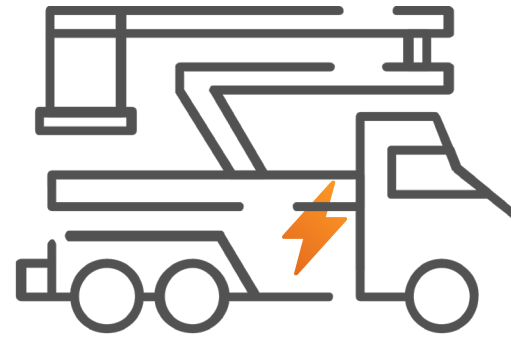
Colton Kennedy, Jamie Wagner, Paul Fortney, Ryan Stigge
October 19, 2021

NET-ZERO CARBON
PRODUCTION
BY **2050**

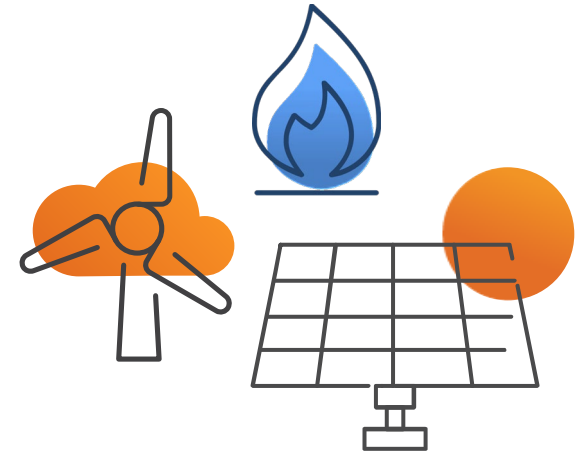


Agenda

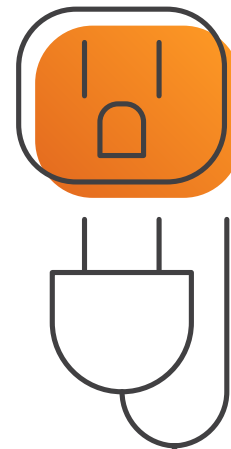
- Energy Portfolio Project Update
- Customer Project Update
- Community Project Update
- Internal Operations Project Update
- Stakeholder Outreach Update



Internal Operations



Energy Portfolio



Customer
Products & Services



Community Partner

Leading the Way

Pathways to
Decarbonization

We Power the Future

Technology
Platform



Electric System Evaluation
& Modernization

Powering the
Future
2050

Workforce
Transformation



Customer Engagement
for the Future



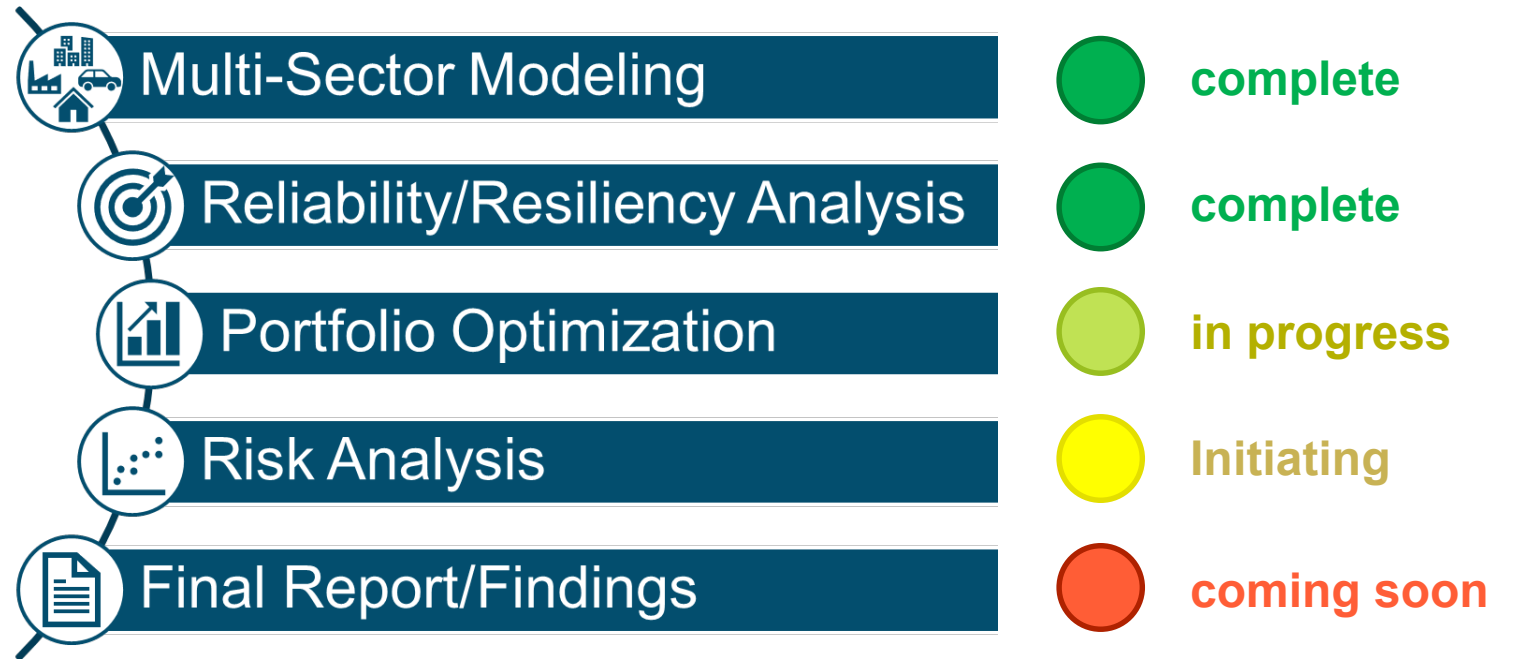
Decarbonization: Energy Portfolio Project



Project Status

- Progress

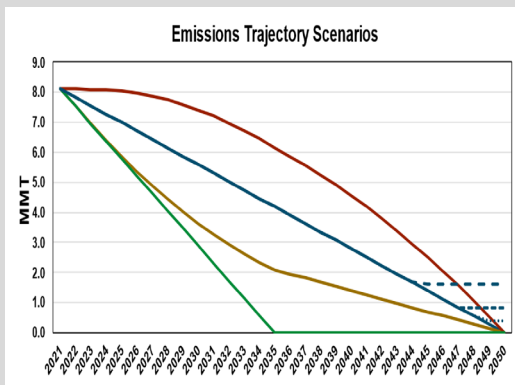
- Multi-sector modeling gives a clear view of future energy demand
- A robust modeling framework will ensure a broad and deep evaluation of alternatives
 - Broad set of technologies
 - Robust resource adequacy analysis
 - Holistic integrated market analysis
- Stakeholder voices have been heard and incorporated throughout
 - Questions have been answered
 - New scenarios have been added



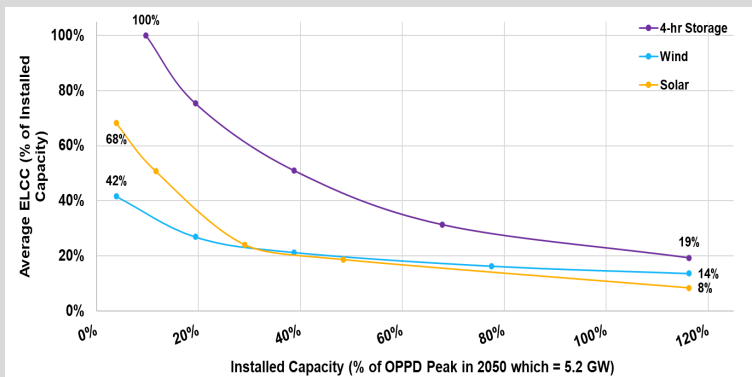
Current Activities

- Portfolio Modeling
 - Developing optimized portfolios based on emissions targets, technology and cost assumptions, and resource adequacy constraints
 - OPPD and E3 teams are undergoing extensive model testing and results validation
 - The full set of draft results being prepared

Emissions Targets



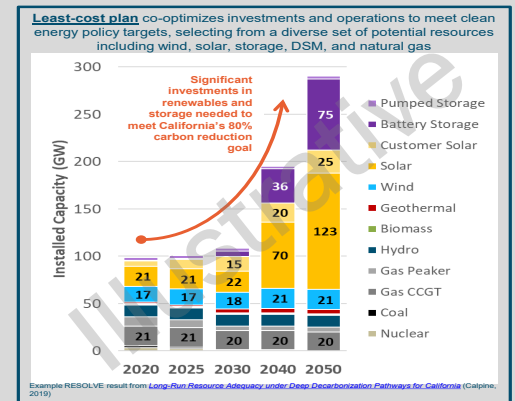
Resource Adequacy ELCC Results



Portfolio Sensitivities

Assumption	
Framing Scenarios Assumptions	Pace of Decarbonization
	Technology Availability
Sensitivity Scenarios Assumptions	Multi-Sector electrification
	Negative emissions technologies
	Technology costs
	Carbon pricing
	SPP Resource Mix
	GHG import/export accounting
	Flexible Loads

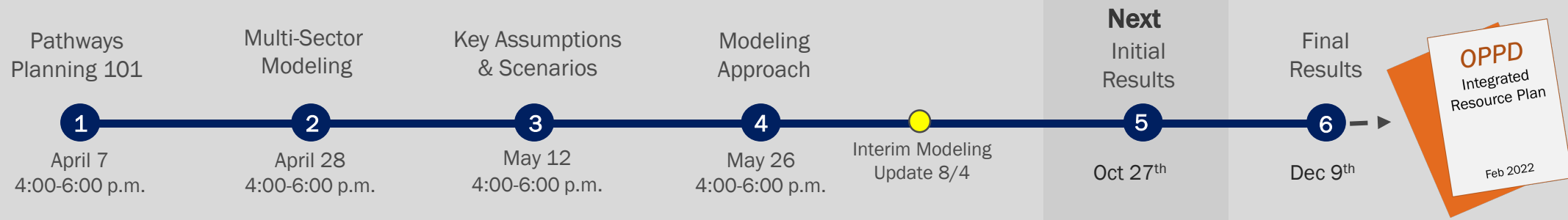
Portfolio Optimization



Upcoming Activities

- Share Initial Results in Workshop #5 (Oct 27th)
- Incorporate stakeholder feedback and additional scenarios or modifications
- Conduct detailed system modeling on initial portfolios
 - Operational flexibility modeling
 - Transmission power flow modeling
 - Detailed economic and risk modeling
 - Resiliency review
- Prepare Final Results for Workshop #6 (Dec 9th)
- Publish draft Integrated Resource Plan incorporating Decarbonization: Energy Portfolio modeling results (Jan TBD)

Energy Portfolio: Stakeholder Workshops





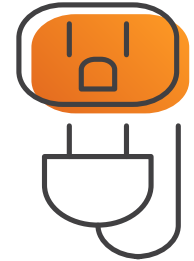
Decarbonization: Customer Project



Customer Project

Goals and Deliverables:

- Develop repeatable process focused on helping customers lower their personal carbon footprint through OPPD programs, products and education
- Key Deliverables:
 - Product strategy
 - Product roadmap
 - Acceleration plan



Customer
Products & Services

Completed Activities:

- Developed and piloted repeatable product evaluation framework
- Completed Phase I Analysis of 228 concepts covering all aspects of decarbonization
- Completed Phase II detailed research and analysis on the 26 top scoring concepts from Phase I
- Residential customer prioritization surveys (Power Panel, Stakeholder Workshop, OPPD Community Connect)

Product Concept Analysis & Scoring

Phase I

Scoring Criteria:

- Target Market
- Customer Value Prop
- Brand Reputation & Customer Experience
- Industry Successes
- Risk to Infrastructure
- Cost/Technology Limitations
- Decarb Benefit
- Other Benefits (DSM, revenue, etc.)
- Feasibility/Complexity Effort Score (tiebreaker)



Phase II

Scoring Criteria:

- Financial (ROI)
- Carbon Reduction Impact
- Customer Impact/Satisfaction
- Market Penetration
- Innovation Brand Reputation
- Operational Efficiency
- Oversight

Additional Analysis Includes:

- High level product design
- Target market analysis
- Annual ramp/penetration
- Value prop to OPPD and Customer
- Cost estimate to implement
- Annual run budget including FTE
- Detailed decarb savings analysis
- Estimated scale of other benefits (DSM, revenue, etc.)

Overall Assumptions:

- 3-5 year view for each concept
- Existing products not included in phase II evaluation
- Enabling capabilities such on-bill financing or AMI are part of the strategy but weren't evaluated as products



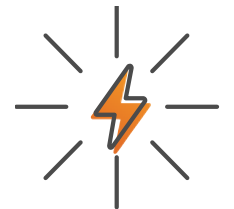
Phase I & II Research & Scoring Highlights

Phase I (228 Concepts Scored)

- High-level research, focus on successful product designs and successes within the Industry
- Focus on ensuring a wide range of ideas covering all customer segments and product areas
- Sample of product concepts explored:
 - Net Zero Construction
 - Heat Pump Water Heaters
 - Commercial Refrigeration
 - White Roof Conversions
 - Variable Frequency Drive Rebates
 - Fuel Cells
 - Mass Transit EV Adoption
 - Customer Owned Solar
 - Composting
 - Home Energy Rating Report/ High Bill Alerts
 - Solar Coins (BitCoin for EE)
 - Residential Wind
 - Neighborhood Solar
 - Battery Storage
 - Plastic, Metal and Glass Recycling
 - BioEnergy with Carbon Capture
 - Native American Support Programs
 - Heat Recovery (Heat Exhaust Generation)

Phase II (26 Concepts Scored)

- Benchmarking of other utilities programs (scale/growth, budget, GHG savings)
- Final roadmap prioritization, based upon team scoring and OPPD Market Research
- Top 10 scoring product concepts (no particular order):
 - C&I Community Solar
 - Energy Star Appliance Rebates
 - Commercial Outdoor Lighting & Controls
 - Residential Shade Trees
 - Commercial Food Service Equipment
 - Residential Lighting & Controls
 - Electric Yard Equipment Program
 - Community Solar Expansion
 - Residential Weatherization
 - Commercial EV Fleet Adoption



Energy Portfolio Linkage

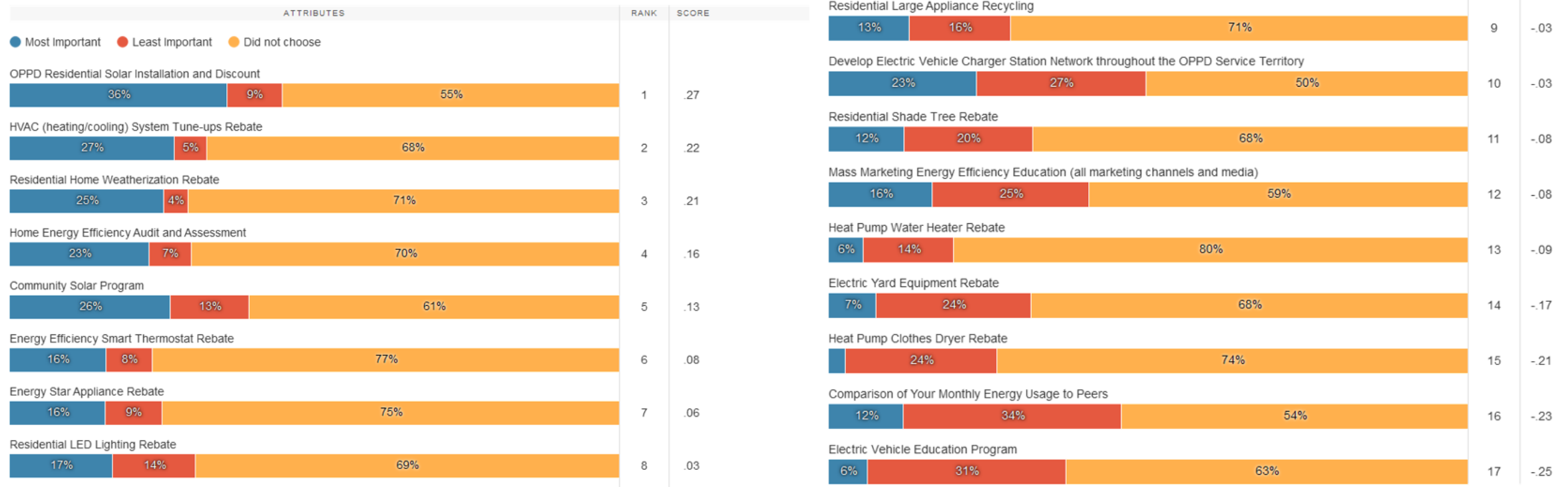
- Initial Energy Portfolio findings indicate there may be substantial opportunity for energy efficiency, load flexibility, and significant increases in renewable resources, particularly in wind and solar generation
- Customer focused programs may be part of achieving these Energy Portfolio driven outcomes:
 - Energy Efficiency
 - Future potentiality studies will include the increasing benefits of energy efficiency to OPPD's portfolio and consider long-run synergies with electrification and economy-wide decarbonization
 - Behind-the-Meter Solar
 - Both a Technical Potentiality and Customer Adoption study will guide opportunities for satisfying OPPD's overall renewable portfolio with customer generation
- As specific opportunities are identified, both feasibility and cost/benefit analysis will need to be performed

Residential Study: Residential Concept Prioritization

Q7 Importance

When thinking about what OPPD should prioritize to potentially help you reduce your carbon footprint, which ONE of the items/actions below do you feel is most important and which ONE is least important? Click here for more details of each item/action.

Total responses: 433



Customer Workstream Next Steps

Finalize
Market
Research

- October 2021

Acceleration
Plan

- October 2021

Strategy
Narrative

- November 2021

Operational
Plan

- December 2021

Target
Completion

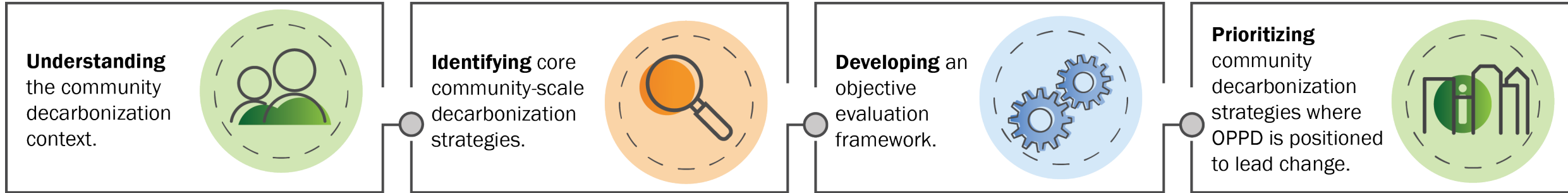
- December 2021



Decarbonization: Community Project



Community Decarbonization Approach & Objectives



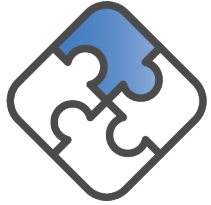
- **Consider another vantage point**, encompassing community-scale decarbonization strategies that reach beyond those traditionally considered by electric utilities.
- Prioritize **areas of focus** and identify potential partners to make meaningful impacts across service territory communities.
- **Position OPPD to lead community initiatives** in the transition towards a low-carbon future.

Selected Climate Action Plans

- **Regionally relevant**, targeting communities located primarily in the Midwest.
- **Recent Climate Action Plans**; varying level of detail for GHG mitigation measures.
- 4 of 6 communities declared a **climate emergency** in 2019.
- Connection to **peer utilities**, allowing benchmarking.



EXPLORE 66 SHARED DECARBONIZATION & ADAPTATION STRATEGIES



ADAPTATION



BUILDINGS



ENERGY



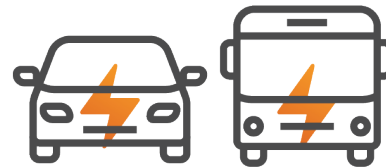
FOOD



LAND USE



LEADERSHIP

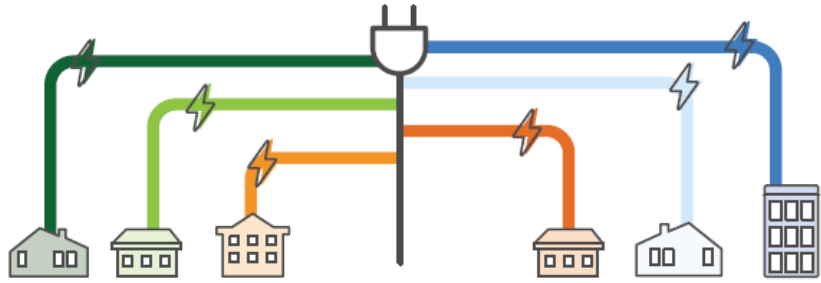


TRANSPORTATION



WASTE & RESOURCE
MANAGEMENT

Exploring Opportunity Areas



Advocating for Advanced Energy Codes and Green Building Standards



Addressing the Energy-Water Nexus



Accelerate the EV Transition



Supporting Distributed Generation

Community Workstream Next Steps





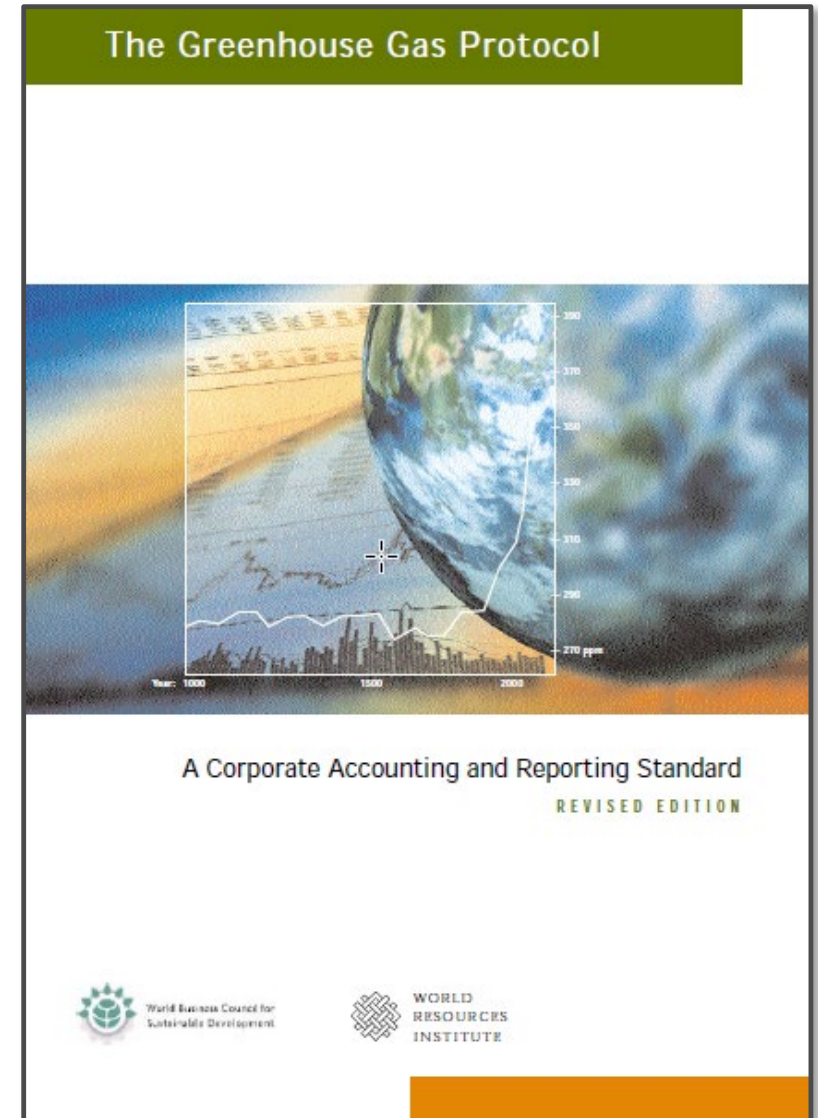
Decarbonization: Internal Operations Project



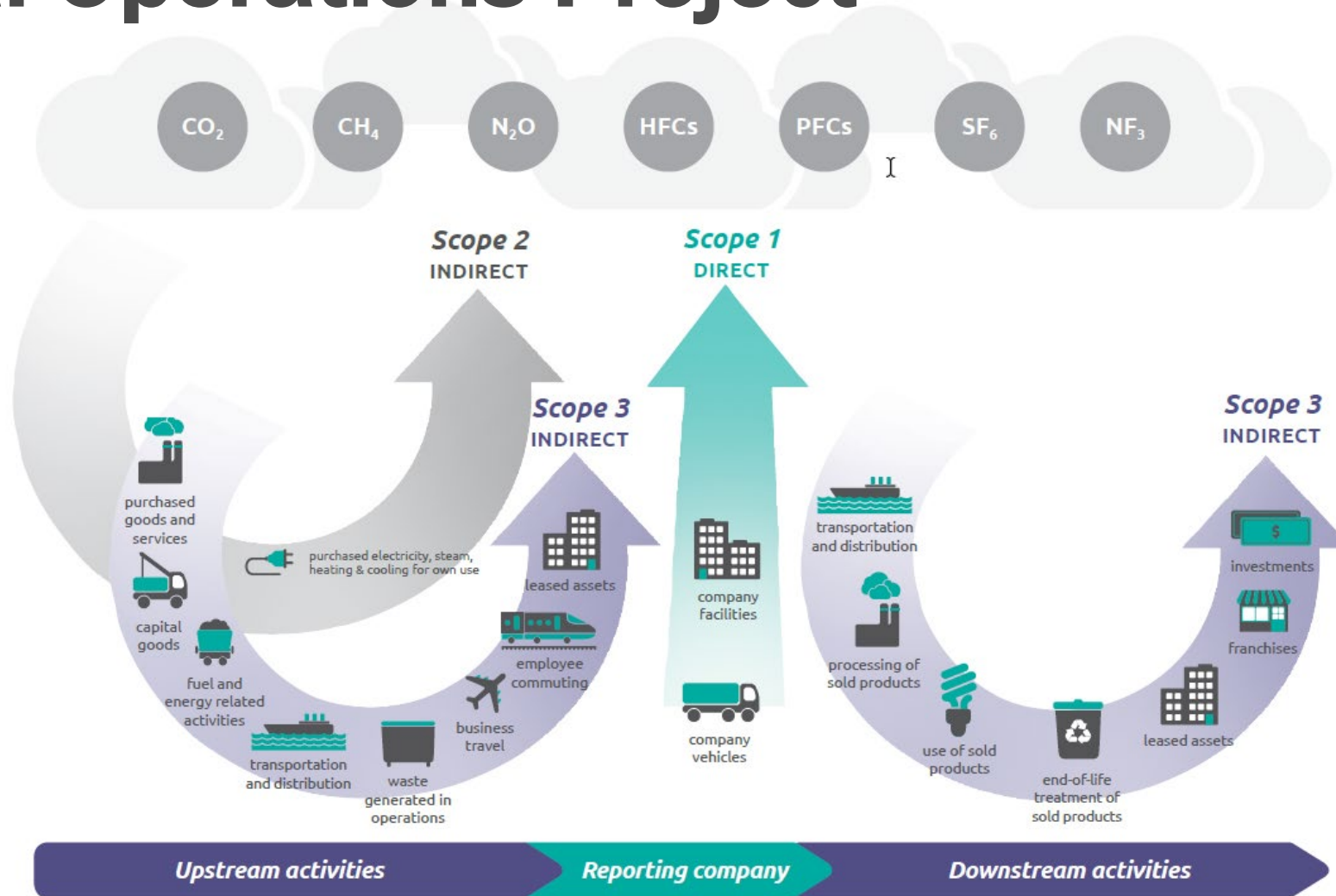
Internal Operations

This project will create a base year greenhouse gas inventory for OPPD to form basis for monitoring progress towards net-zero carbon.

- GHG Protocol Corporate Accounting and Reporting Standard.
- Transition inventory and reporting to business to ensure repeatable and certifiable yearly.
- Initial scoping and characterization of projects to reduce OPPD's largest non-generation emission sources.
- Partner with business to build/revise current business processes to reflect OPPD's prioritization of reducing carbon impact.



Internal Operations Project



Source: Figure 1.1 of Scope 3 Standard.

Required: Scope 1 and Scope 2

Scope 1 Emission Sources:

- Stationary Combustion Sources
 - Fossil Generation
 - Internal Combustion Engines: Emergency Engines, Auxboilers
- Mobile Combustion Sources
 - Vehicle Fleet
 - Equipment Propane
 - Coal Handling Equipment
- Process/Fugitive Sources
 - Refrigerants (facilities and transportation)
 - Coal Pile
 - T&D SF6 Leaks
 - Natural Gas Pipeline
 - Welding-Acetylene
 - Fire Suppression Systems

Scope 2 Emission Sources:

- Purchased and Consumed Electricity
- T&D Losses

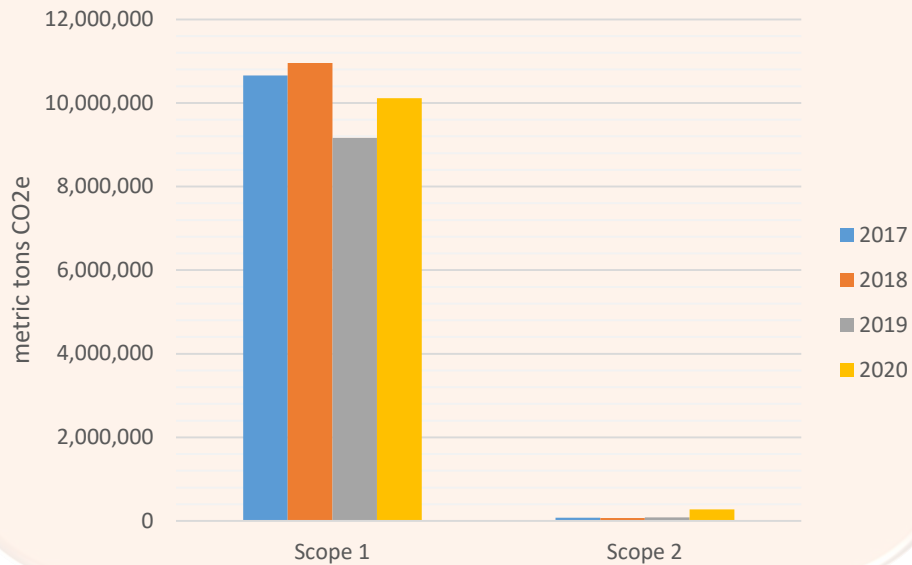
Scope 3 Emission Sources:

- Purchased Goods and Services*
- Energy and Fuel Related Activities
 - Coal Purchases
 - Coal Rail Transportation
 - Purchased Power Delivered to End-Users
 - Natural Gas Purchases
- Business Travel
- Employee Commute
- Waste

Required: Scope 1 and Scope 2

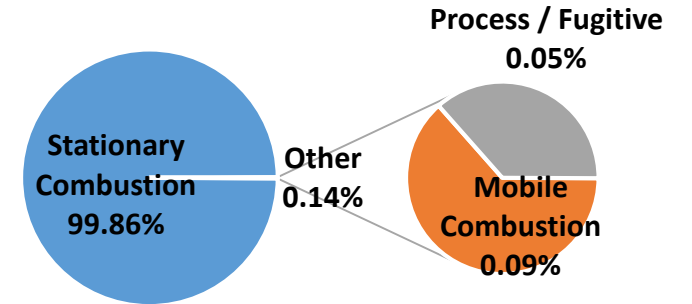
	Metric tons CO ₂ e			
	2017	2018	2019	2020
Scope 1	10,657,608	10,951,779	9,161,659	10,113,613
Scope 2	73,646	69,581	84,601	272,634
	10,731,254	11,021,359	9,246,260	10,386,247

GHG Inventory



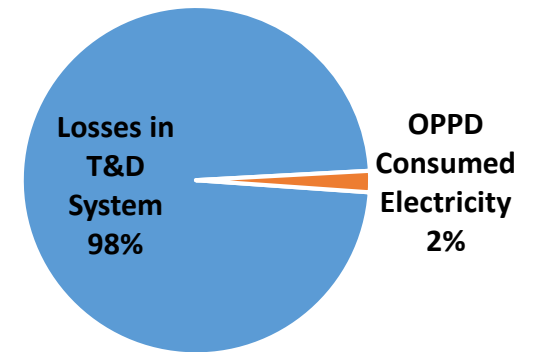
Scope 1	Avg Emissions
Stationary Combustion	10,206,850
Mobile Combustion	9,075
Process / Fugitive	5,237
Total	10,221,161

Scope 1: Avg Emissions



Scope 2	Avg Emissions
Losses in T&D System	70,020
Purchased and Used Electricity	5,709
Total	75,729

Scope 2: Avg Emissions



* These data currently undergoing validation



Decarbonization: Stakeholder Outreach



Energy Portfolio Workshops

April – December 2021

Objective:

- Provide a deeper dive of decarbonization planning process and how it will support OPPD's Integrated Resource Plan (IRP)
- Seek feedback along the way and explain how feedback was used or why not used

Outcome:

- Higher satisfaction with process

Outreach Levels (IAP2):

- Varied from Inform to Consult



Decarbonization – Energy Portfolio Workshops

Approximately 100 people have
attended one or more workshop

Many attended multiple
workshops within the series

April 7	Pathways Planning 101
April 28	Multi-Sectoral Modeling
May 12	Developing Key Assumptions & Scenarios
May 26	Developing Modeling Approach
Aug. 4	Interim Modeling Update
Oct. 27	Initial Results
Dec. 9	Final Results

Speakers Bureau Engagement

- MAPA – Natural Resources Committee
- Green Bellevue
- Sierra Club

Decarb – Customer & Community Meeting

September 2021

Community Objectives:

- Understand community decarb context; identify core community-scale decarb strategies; develop an objective evaluation framework and prioritize strategies

Customer Objectives:

- Gather input for developing product to help customers lower their personal carbon footprint
- Deliver product strategy, roadmap and acceleration plan

Outcome:

- Prioritize areas of focus to make meaningful impacts across service territory communities
- Position OPPD to lead community initiatives in the transition towards a low-carbon future

Outreach Levels (IAP2):

- Consult



OPPDCommunityConnect.com

Launched July 2020

Engagement Platform Objective:

To lead the way; be the first and best source of Information and increase interaction

Decarb Engagement Tools:

Q & A, Comments, Ideas, Quick Polls, Surveys

Decarbonization OPPDCommunityConnect Statistics:

- **Projects**
 - 8 project pages created associated with Pathways to Decarbonization
 - Included workshop information and recordings
- **Visitors to Decarbonization project pages**
 - 7,700 between July 2020 thru Sept. 2021 (approximately 47,000 total site visitors)



Pathways to Decarbonization

By partnering with customers and communities, OPPD is striving for net-zero carbon production by 2050.

[Read more](#)

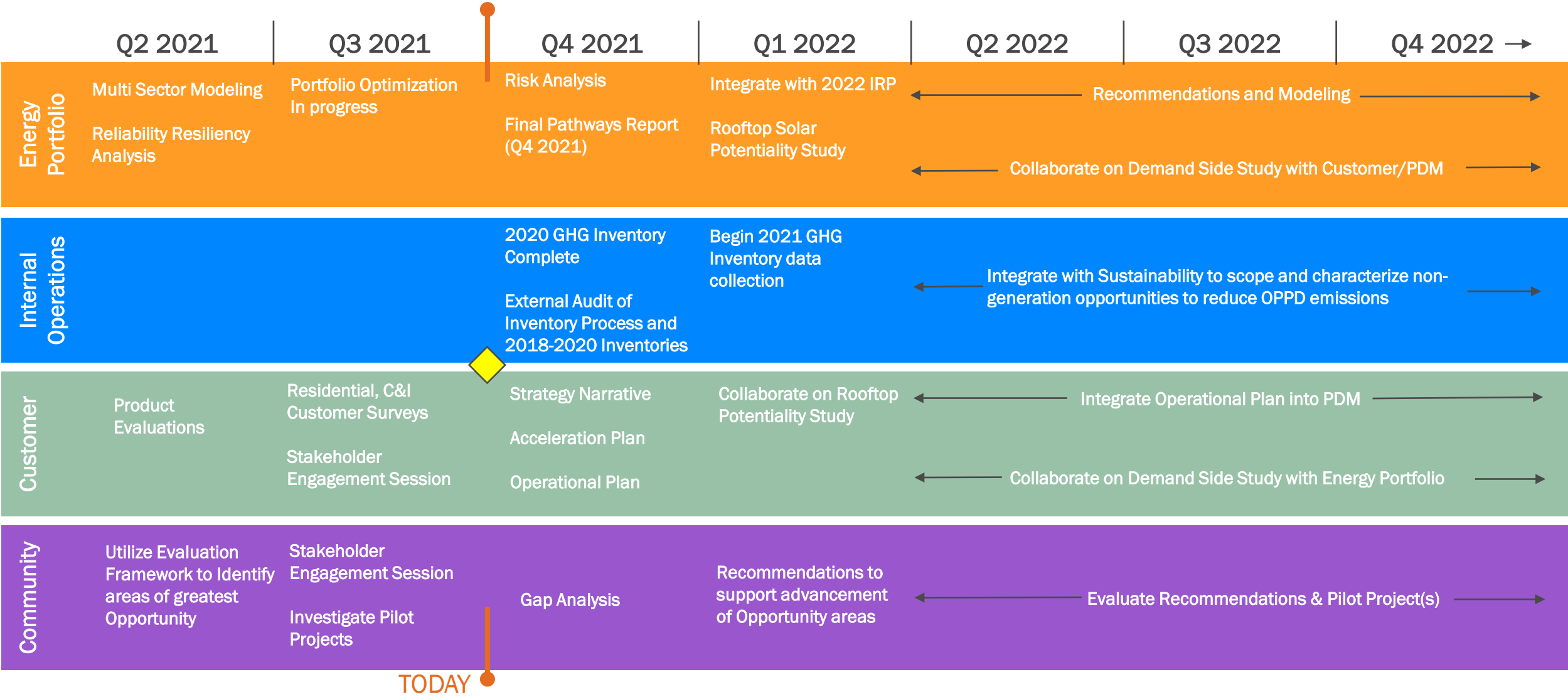
Q & A IDEAS

Have questions for our project team? Ask us here and we'll get back to you within 3 business days.

Ask a question...

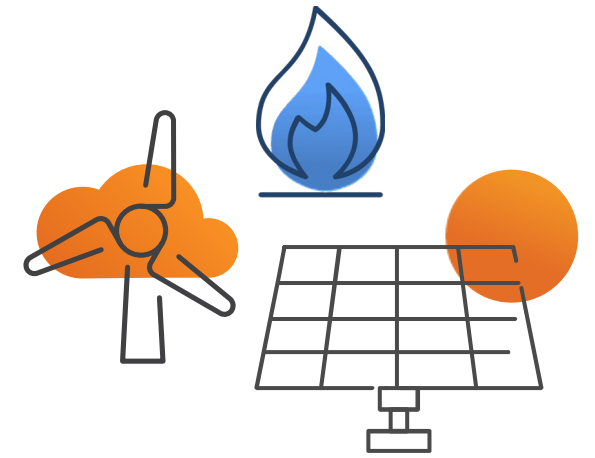
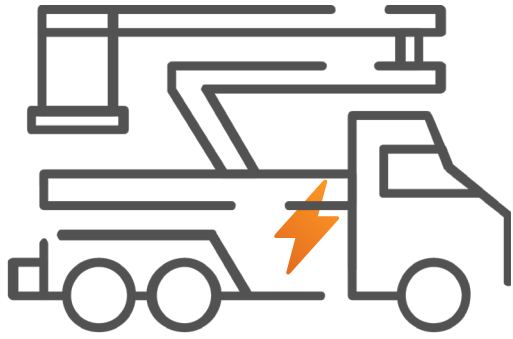
Submit

Program Milestone Timeline



TODAY

◆ ELT checkpoint/BOD update



Questions, Discussion

