



Colorado Springs Utilities
It's how we're all connected

Sustainable Energy Plan

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Agenda

1. About Colorado Springs Utilities
2. IRP Process
3. Sustainable Energy Plan

Our mission:

To provide safe, reliable, competitively-priced electric, natural gas, water and wastewater services to the citizens and customers of Colorado Springs Utilities.

Our goals

Deliver quality. Uphold a culture of safety and service reliability.

Commit to the community. Contribute to the growth, vitality and quality of life in the Pikes Peak region.

Execute organizational excellence. Courageously lead a talented workforce who embraces continuous improvement.

Focus on the customer. Serve by anticipating and exceeding their expectations



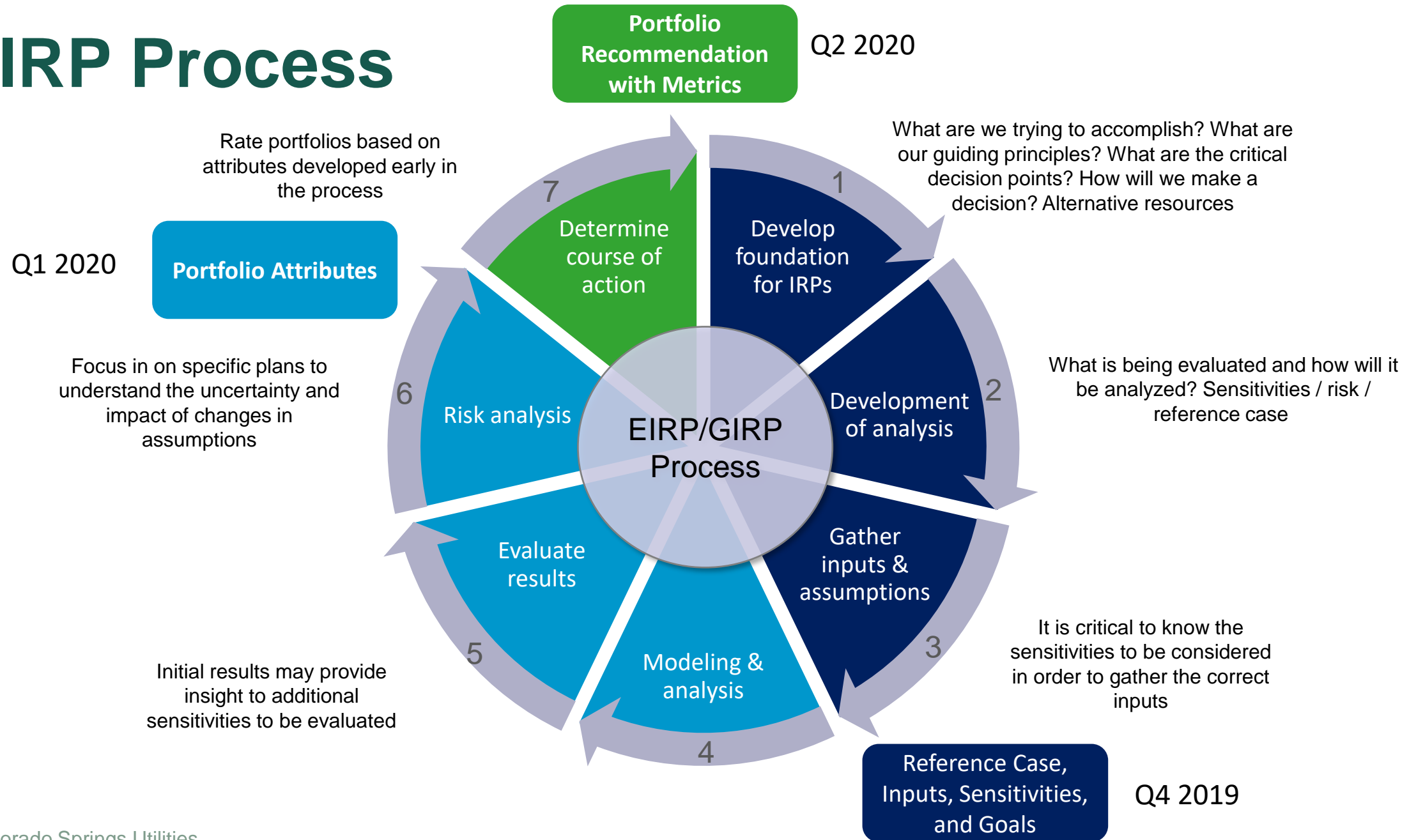
IRP Process

Energy Vision

Provide resilient, reliable and cost-effective energy that is environmentally sustainable, reduces our carbon footprint and uses proven state-of-the-art technologies to enhance our quality of life for generations to come.



IRP Process



Public Process & Outreach Overview

- Each phase had a complete public process
 - Over 700 Emails to energyvision@csu.org
 - 3 Surveys
 - 6 Workshops for Business Customers and Public
 - Public comments at UPAC and Utilities Board meetings
- Events and Presentations
 - Materials and the FAQ were made available at public events.
 - Presentations to community groups by invitation
- Stakeholder Presentations to UPAC
 - Stakeholder groups were invited to speak to UPAC on behalf of their memberships
- Media and Newsletters
 - Media engagement nearly every month



EIRP Community Outreach

Survey Responses	Energy Vision	Phase 2	Phase 3
Residential	563	619	608
Commercial	143	136	234
Employee	183	350	253
Open	652	851	2,019
Total	1,541	1,956	3,116

Community Outreach Surveys

Energy Vision

Potential Energy Vision statements were tested and feedback on criteria was solicited.

Open ended feedback provided insight about community expectations for future energy planning.

Phase 1

Comments from Energy Vision shared pertaining to IRP goals.

Phase 2

Attributes were evaluated and feedback provided to determine which were valued most and why.

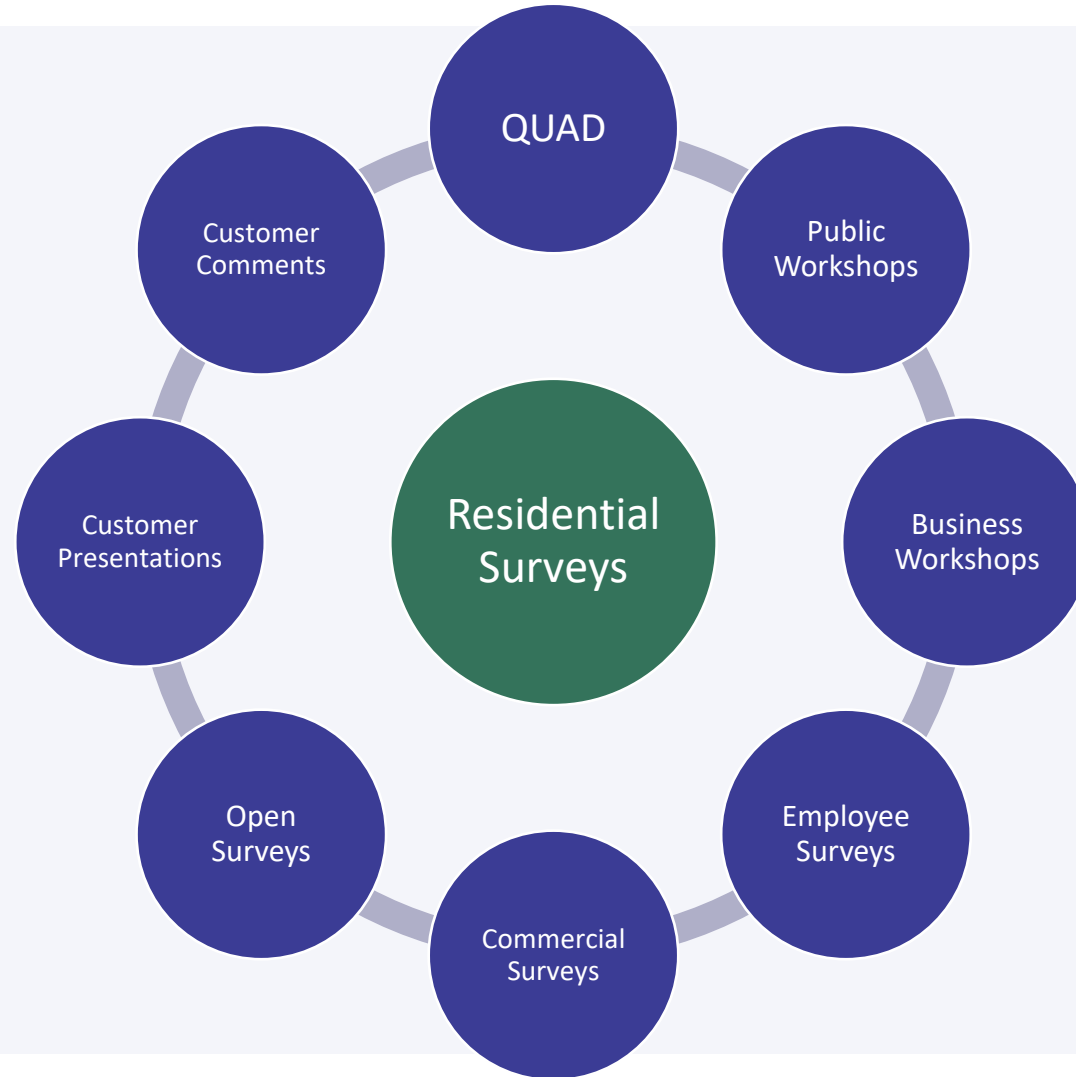
Open ended feedback was asked to learn more about views on attributes.

Phase 3

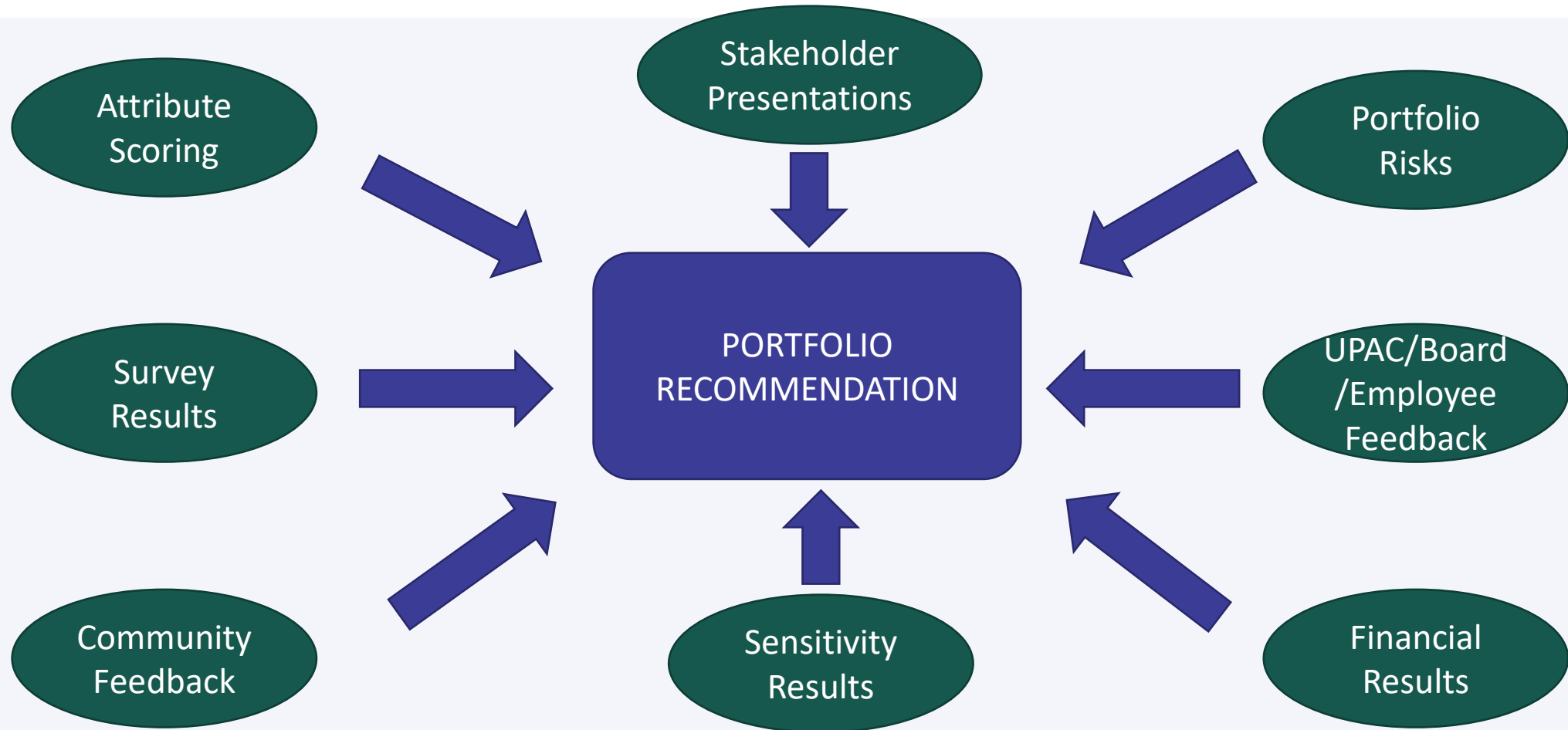
Pathways were examined to understand preference and reasons for selection.

Community engagement levels of energy savings were tested.

Voice of the Customer – Community Input



Inputs to Portfolio Recommendation

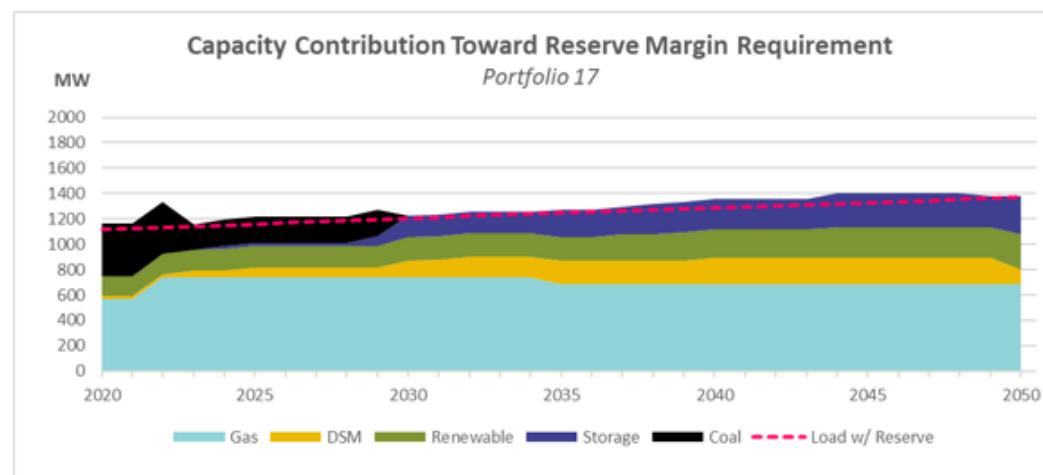


EIRP PORTFOLIO 17

Overview

- Carbon reduction goals: 80% by 2030, 90% by 2050
- Coal retirement: Drake Power Plant no later than 2023, Nixon Power Plant no later than 2030
- Other retirement: Birdsell Power Plant no later than 2035
- Replacement: Small, mobile natural gas generators, non-carbon generation and storage plus energy efficiency initiatives

Pathway	Portfolio	Carbon targets	2022	2023	2025	2026	2030	2035	2040	2050
Pathway E	Portfolio 17	2030 80%		Drake retire			Nixon 1 retire	Birdsell retire		
		2050 90%		Small, mobile, natural gas generator			Non-carbon, storage & DSM	Non-carbon, storage & DSM		
Gas	G-E17		LDC IT with oil backup		Expand/new pipeline capacity with NNT					



Resource Change 2021-2050 (MW)		Financial Metrics		Attribute Score	
Drake (2023)	-208	30 Year Revenue Requirement	\$36.47B	Reliability	100
Nixon 1 (2030)	-207	Average Annual Revenue Requirement	\$1.22B	Cost/Implementation	46
Nixon 2-3	0	Average Adjusted Debt Service Coverage	1.85	Environment/Stewardship	69
Birdsell (2035)	-54	Average Adjusted Days Cash on Hand	154	Flexibility/Diversity	88
Front Range	0	30 Year Electric Revenue	\$18.21B	Innovation	70
New Gas	156	Sensitivities (\$ incremental)		Total score (normalized)	100
DSM	76	Social Cost	\$0.97B	Risks	
Storage	417	High Load	\$330M		
Solar	150	Low Load	(\$317)M		
Wind	500	High Gas	\$458M		
Hydro	0	Low Gas	(\$491)M		
Geothermal	10	90x30	\$98M		
Biomass/ Biogas	10	100x50	\$100M		
Carbon Capture	0	Drake 2022	(\$55)M		
Nuclear	0				



Attribute rank



Financial rank

Sustainable Energy Plan

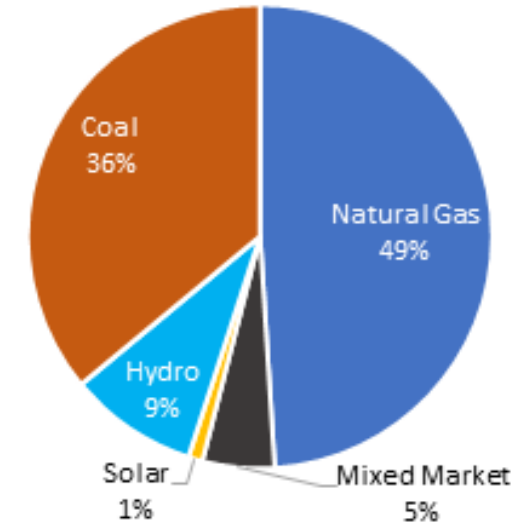
Sustainable Energy Plan Goals

- **Commit to our community** with industry-leading reliability and resiliency and support the economic growth of the region.
- **Benefit customers** by maintaining competitive and affordable rates and advance energy efficiency.
- **Reduce carbon emissions** at least 80% by 2030 and 90% by 2050.
- **Increase renewable energy** and incorporate storage resources.
- **Retire all coal generation by 2030** and reduce reliance on fossil fuels.
- **Integrate new technologies** responsibly by modernizing our grid and partner with customers to create distributed energy resources throughout the community.

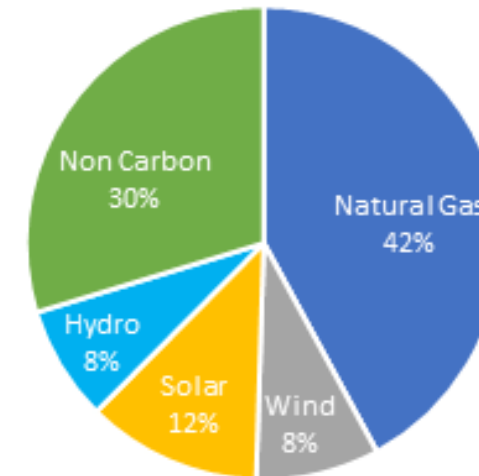
Generation

- Current generation capacity of 1151 MW
- 95 MW of solar added in 2019 & 2020 (Palmer and Grazing Yak)
- 60 MW of wind added in 2020
- No more coal generation by end of 2020s
 - Drake retired no later than end of 2022 and Nixon 1 retired no later than end of 2029

2019 Electric Generation Mix



2035 Predicted Electric Generation Mix



Martin Drake Power Plant retirement

Retire no later than 2023

Temporary power generation on Drake site

- Primary fuel is natural gas
- Backup is fuel oil
- Online by 2022

Workforce planning

- Transition all Drake employees into other positions in the organization

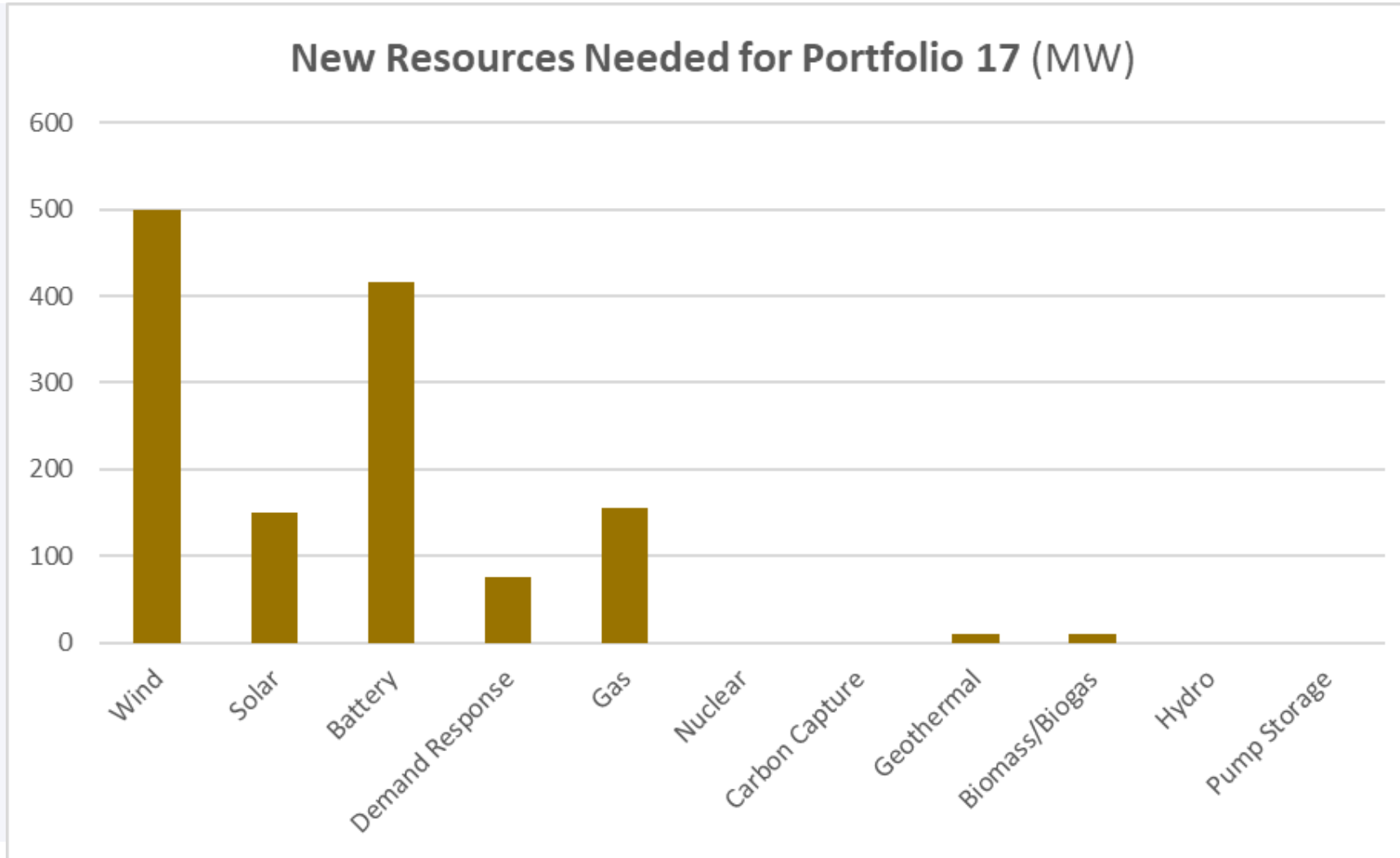


New generation/ gas supply

- Procuring 180 MW of temporary power generation (last fossil fuel resource)
 - Allow for more operational flexibility with addition of renewables sources
- Sustainable Energy Plan also includes 500 MW of wind, 150 MW of solar, 400 MW of energy storage
- Feasibility study planned for resources such as biomass, geothermal and additional hydro
- Military resiliency and distributed generation siting in progress
- Gas supply to support new distributed generation and system growth



Portfolio 17 New Resources



Renewable energy

- About 20% of our portfolio is generated by renewable sources today
- Solar/wind/hydro
- Benefit of long-term power purchase agreements
- Future renewable energy and storage project
- Green Power: enroll today



Solar and wind energy

- Diverse energy mix important for energy resiliency and emissions reduction
- Solar and wind complement each other
- Smooth out daily and yearly peaks and valleys
- Various distributed energy storage technologies being explored to enhance resiliency



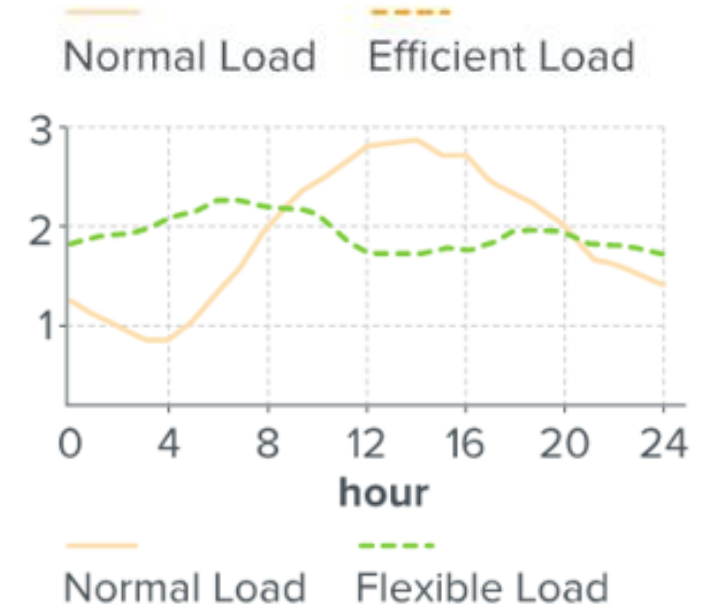
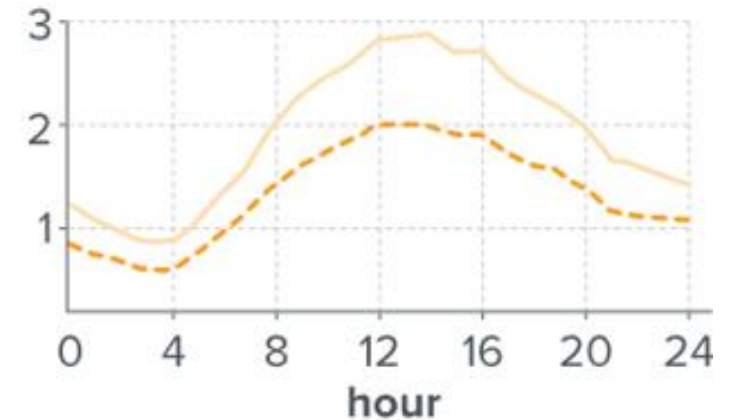
Energy Markets – Joint Dispatch

- Real-time energy market in Colorado
- Generation resources are pooled and dispatched in real time to most economically and reliably serve customers
- Support renewable integration
- March through May returned more than \$800,000 to customers and avoided emitting more than 25,000 tons of carbon dioxide emissions
- Prepare for entry in Western Energy Imbalance Market



Demand Side Management (DSM)

- Supports our Energy Vision and IRP Goals
- Two Strategies
 1. Energy Efficiency
 2. Demand Response
- Tactics
 - Codes & Standards
 - Customer Education & Outreach
 - Rates & Incentives
 - Products & Services
 - Electrification
 - Distributed Energy Resources



Distributed Energy Resources (DER)

- Rooftop solar
- Energy storage
- Microgrids
- Interruptible Customers
- Customer Generation
- Smart Thermostats
- Electric vehicles
- Advanced Technologies Campus



THE FUTURE OF OUR ENERGY SYSTEM

As we decommission fossil fuel generation and integrate more renewables, it is essential that we maintain a safe, reliable, and cost-effective energy supply. Here's how we'll do it.



TECHNOLOGY +
ENERGY EFFICIENCY



RENEWABLES +
BATTERY STORAGE



- 1 TODAY, WE HAVE ABOUT 1,000 MEGAWATTS OF FOSSIL FUEL ELECTRIC GENERATION. IN THE COMING YEARS, WE WILL DECOMMISSION MORE THAN A QUARTER OF IT.
- 2 THE COMMUNITY INCORPORATES SMART TECHNOLOGY (INCLUDING SOLAR PANELS, STORAGE SYSTEMS, AND ELECTRIC VEHICLES) IN THEIR HOMES AND BUSINESSES AND PARTICIPATES IN ENERGY EFFICIENCY, REDUCING THE AMOUNT OF NEEDED REPLACEMENT GENERATION.

- 3 OUR COMMUNITY AND ENVIRONMENT BENEFIT FROM UTILITY-SCALE SOLAR AND STORAGE PROJECTS (GROWING CARBON-FREE GENERATION TO MORE THAN 260 MEGAWATTS BY 2023).
- 4 MINIMAL AMOUNTS OF NATURAL GAS GENERATION CAN BE OUR BRIDGE TO NEW TECHNOLOGIES.



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