



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

Electric and Gas Integrated Resource Plans

Peak Alliance for a Sustainable Future

Sustainability in Progress – Transitioning to Clean Energy

Michael Avanzi, Energy Planning Manager

Agenda

- Energy Vision and Pillars
- Introduction to the IRP Process and Timeline
- Goals of IRPs
- Electric and Gas Sensitivities
- Schedule
- Methods of Public Participation

Colorado Springs Utilities Mission & Vision

Our Mission

Provide safe, reliable, competitively-priced electric, natural gas, water, and wastewater services to the citizen owners and customers of Colorado Springs Utilities.

Our Vision

Colorado Springs Utilities is a treasured community asset. We are welcome partners, well-known for responsible and dependable service. We are vital to the future of our region.

Our 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.

Pillars of the Energy Vision



ECONOMIC

Cost-effective and equitable initiatives that drive a strong economy



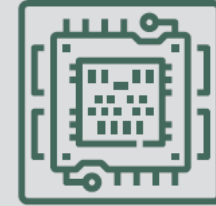
ENVIRONMENT

Sustainable solutions that complement our natural resources



RESILIENCY

Reliably withstand and recover from disturbances in a dynamic environment



INNOVATION

Proactively and responsibly evolve in a transforming landscape

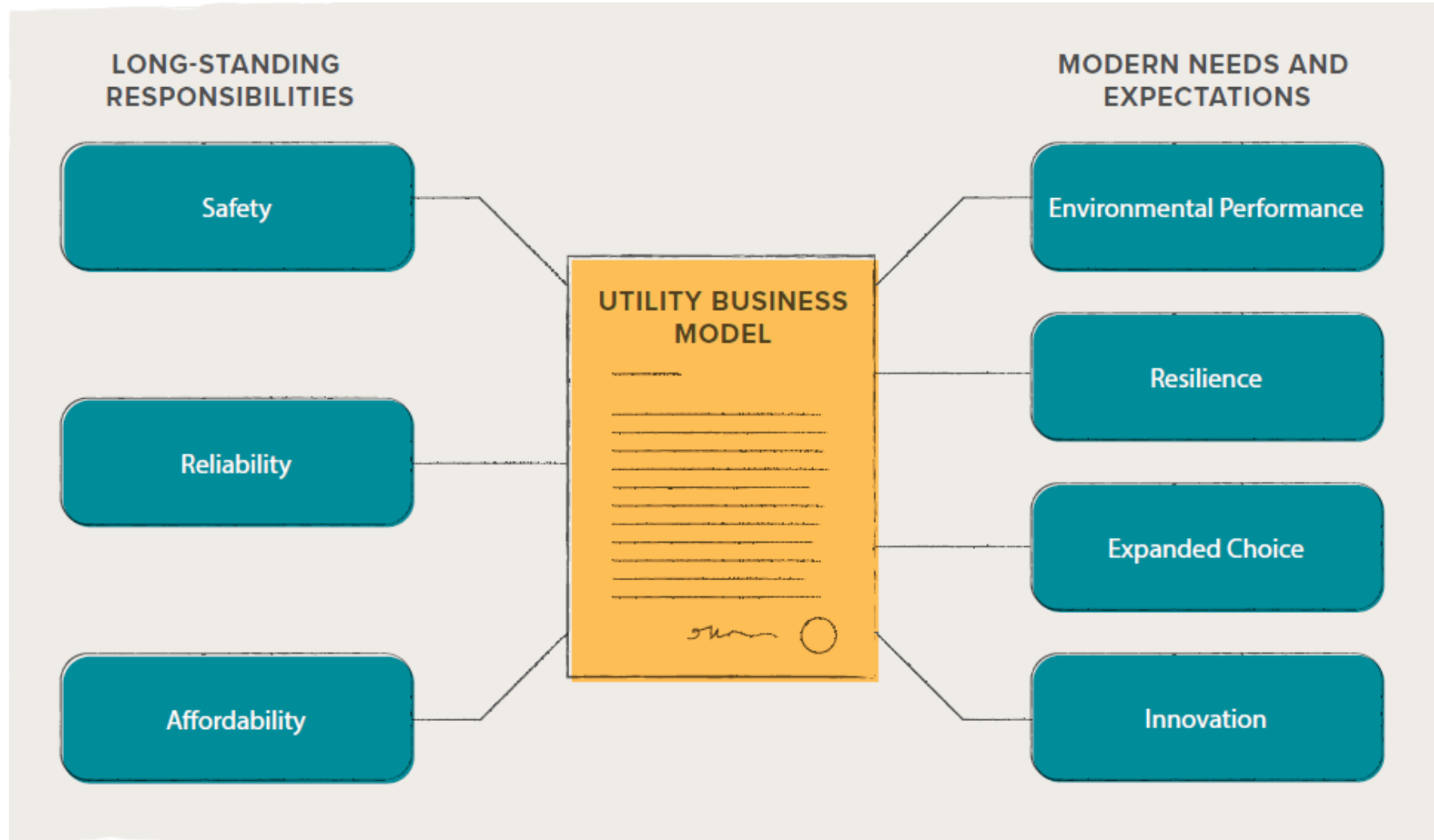
**OUR FOUNDATION IS
THE COMMUNITY WE SERVE**

Industry Transformation

- Six key factors driving major changes in industry
- Changes have significant implications for resource planning, gradual paradigm shift



Evolving Utility Business Model



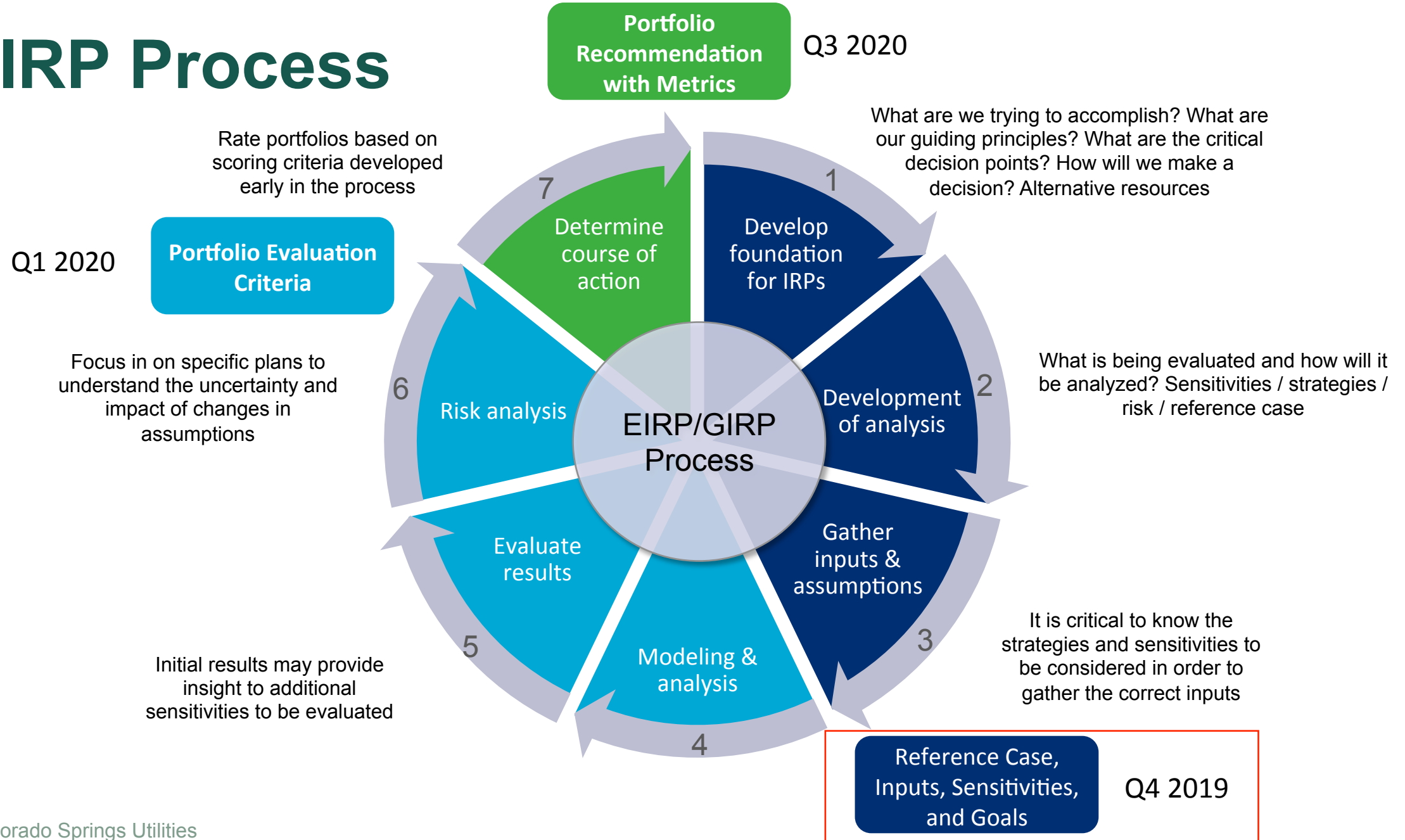
What is an Integrated Resource Plan (IRP)?

Our energy IRPs are a roadmap to meet forecasted electric and natural gas needs of the community using both supply and demand side resources to ensure resilient, reliable and cost-effective energy that is environmentally sustainable.

IRP terminology

TERM	DEFINITION
Energy Vision	Set direction and guidance for IRPs
Reference Case	Starting point of a plan including the current configuration and major assumptions/inputs previously agreed upon
Sensitivities	Change an assumption/input to determine the impact. Uncertainties can be bounded with low, mid, high sensitivities to test potential outcomes.
Strategies	Methods or actions needed to achieve specific goals and targets
Portfolios	Potential configurations for multiple systems / plants / generators
Attributes	Important criteria that represents broad metrics necessary for evaluating portfolios
Course of Action	Agreed upon action plan

IRP Process



Significance of these IRPs

- Drake, Birdsall and Nixon potential closures evaluated
- Gas and non-potable supply changes
- Environmental/carbon strategies
- Evaluation of battery storage
- Electrification potential
- Electric vehicles and rooftop solar
- Evaluation of market participation
- Distributed generation and military resiliency
- New business model



Utilities Policy Advisory Committee

The Utilities Policy Advisory Committee (UPAC) is a Utilities Board directed advisory committee that reviews, analyzes and provides recommendations to the Utilities Board on specific issues or policies.

UPAC members are customers with diverse backgrounds that volunteer their time to serve on the committee.

UPAC meetings are the first Wednesday of each month at 8 a.m. in the Blue River Board Room on the fifth floor of the South Tower in the Plaza of the Rockies (121 S. Tejon Street). All meetings are open to the public.



Rex Adams
Chair



Doc Colvin



Larry Barrett



Scott Harvey
Vice Chair



Rich Kramer



Nicole Inabinet
Alternate



Balu Bhayani



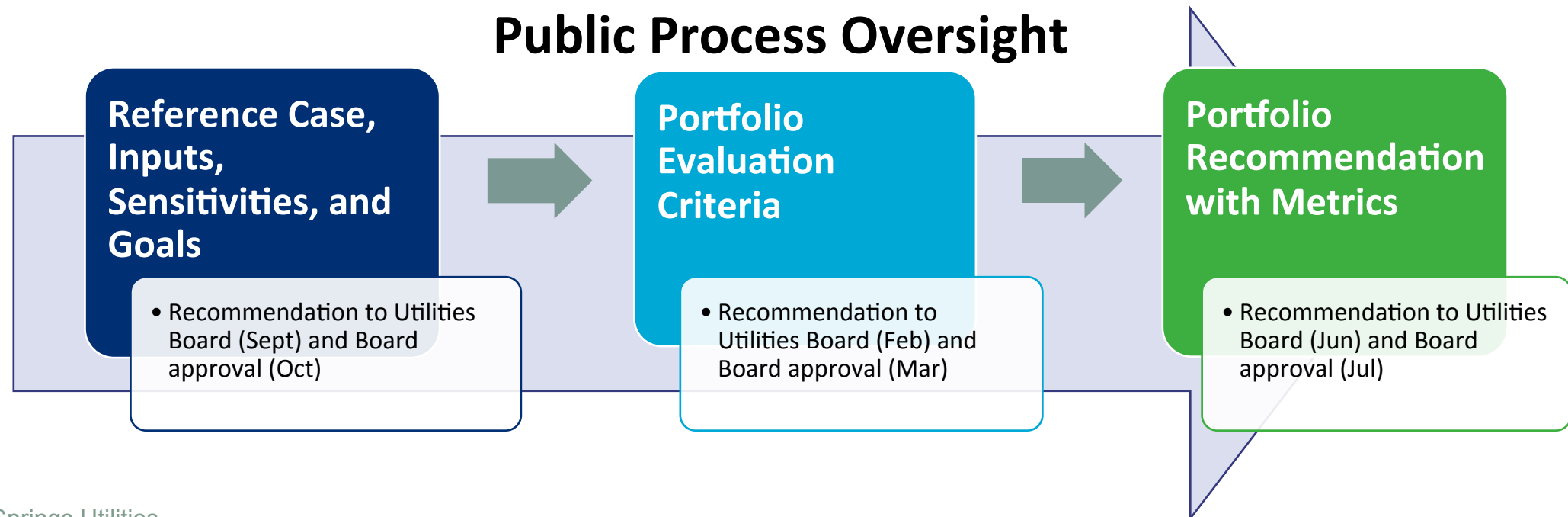
Gary Burghart



Hillary Dussing

Utilities Policy Advisory Committee (UPAC) Assignment

- Evaluate and provide feedback for process plans, modeling assumptions, inputs, targets, evaluation criteria for the 2020 Electric and Gas Integrated Resource Plans (EIRP/GIRP) based on the Energy Vision.
- Oversee public outreach planning, provide feedback on portfolio options, and deliver recommendations to the Utilities Board.



Goals of 2020 Integrated Resource Plans (draft)

- Develop long-term plans that align with the Energy Vision
- Reduce reliance on fossil fuels
- Further advance energy efficiency and demand response
- Grow renewable portfolio
- Establish timelines for decommissioning of assets
- Meet all environmental regulations with specific metrics that include reducing our carbon footprint
- Proactively and responsibly integrate new technologies
- Maintain competitive and affordable rates and the financial health of the four-service utility
- Industry leading reliability and resiliency while avoiding potential stranded assets
- Build safe and secure systems
- Support economic growth of the region
- Enhance the quality of life for customers and the community

Economic Guiding Principles

- Maintain competitive and affordable rates
- Maintain financial health of the four-service utility
- Support economic growth of the region



ECONOMIC

Cost-effective and equitable initiatives that drive a strong economy

Environment Guiding Principles

- Meet all federal, state and local environmental regulations with specific metrics in the EIRP including reducing our carbon footprint
- Support the electrification of transportation, buildings and industry
- Promote responsible and timely energy use by further advancing energy efficiency and demand response
- Reduce reliance on fossil fuels and grow renewable portfolio



ENVIRONMENT

Sustainable solutions
that complement our
natural resources

Resiliency Guiding Principles

- Build safe, secure and reliable systems
- Partner with the military installations and other customers on their resiliency goals
- Incorporate distributed generation and distributed energy resources throughout our service territory

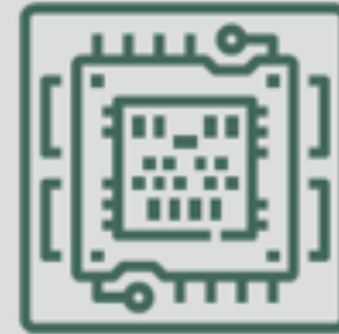


RESILIENCY

Reliably withstand and
recover from disturbances
in a dynamic environment

Innovation Guiding Principles

- Promote the advancement of smart technology in homes, businesses and the community
- Transform our energy business model by integrating emerging technologies such as microgrids
- Expand customer choices through service offerings that may include battery storage and electric vehicle incentives
- Modernize our grid with Advanced Metering Infrastructure and Advanced Distribution Management Systems



INNOVATION

Proactively and responsibly evolve in a transforming landscape

Electric IRP Reference Case (draft)

Reference Case Assumptions	Methodology (Study period through 2050)
Load Forecast	Utilize Planning and Finance Department's peak demand and sales forecasts
Planning Reserve Margin	16.5%. Recommendation from reserve margin study
Commodity Price Forecast (Gas, Coal, Energy Market)	First 5 years utilizes short-term forward pricing. Fundamental forecast utilized between 2025-2050, from ABB 2019 Spring reference case commodity forecast
Energy Efficiency	1% annual energy efficiency savings/spend throughout study period. No dispatchable capacity provided beyond what's included in load forecast.
Renewables	264 Megawatt (MW) solar and 25 MW battery by 2024. Rooftop solar provides no additional capacity on peak. Integration costs from Xcel Balancing Authority.
Drake and Birdsall¹	Retire by 2035; no selective catalytic reduction control
Nixon	No selective catalytic reduction control (will perform sensitivities around nitrogen oxides [NO _x] controls). Not retired during study period.
Front Range	No selective catalytic reduction control (will perform sensitivities around NO _x controls). Not retired during study period.
Military Resiliency	Sensitivities to determine cost impact of siting various amounts of generation on military bases
Hydro	Maintain/extend existing hydro contracts through Western Area Power Administration (WAPA)
Interruptible Customer Load	Assume 70 MW of peak load by 2023. 50 MW is interruptible.
Transmission	Transmission project costs to import replacement generation for Drake/Birdsall ²

EIRP Sensitivities (draft)

- High and low load growth
- Low cost energy efficiency
- High demand response potential
- Regional transmission organization (RTO)/Market
- High and low natural gas prices
- Plant decommission dates*
- Carbon reduction*
- Renewables*
- Military resiliency
- Low energy purchases available
- High and low renewables/battery costs
- Carbon price
- High renewable integration costs
- Extension of investment tax credit/production tax credit (ITC/PTC)
- Higher and lower planning reserve margin
- Front Range reliability¹

* see subsequent slides

Plant Decommission Sensitivities (draft)

	Decommissioning Sensitivities	Environmental
Drake/Birdsall	All units in - 2025, 2028, 2030 Birdsall Only 2025 Drake 6 only 2025	
Nixon 1	2030, 2035, 2040, 2050	SCR in 2028
Front Range	2030, 2040, 2050	SCR in 2028, 2038

Renewables Sensitivities (draft)

- 100% by 2030
- 100% by 2040
- 100% by 2050
- 100% by 2030 (market purchases available)
- 100% by 2040 (market purchases available)
- 100% by 2050 (market purchases available)
- 30% and 50% by 2030
- 40% and 60% by 2040
- 60% and 80% by 2050
- 100% Carbon Reduction by 2050
- 90% Carbon Reduction by 2050

Carbon Reduction Sensitivities (draft)

- 50% by 2030, 90% by 2050¹
- 50% by 2030, 100% by 2050
- 50% by 2030, 80% by 2040, 90% by 2050
- 80%² by 2030, 90% by 2050
- 80% by 2030, 100% by 2050

Gas IRP Reference Case (draft)

Reference Case Assumptions	Methodology (Study period through 2050)
Load Forecast	Utilize Planning and Finance Department's peak demand and sales forecasts
Hourly Peak Factor¹	5.1% based on recent study conducted by gas planning
Natural Gas Price Forecast	First 5 years utilizes short-term forward pricing. Fundamental forecast utilized between 2025-2050, from ABB 2019 Spring reference case commodity forecast
Gas-fired generation	No new local distributing company (LDC) load from gas-fired generation
Interruptible Customer Load	Assume no change to prior years
Current Capacity	Assume no changes to current capacity charges (Firm, No Notice Transport (Storage), Propane Air)

GIRP Sensitivities (draft)

- High and low load growth
- High and low gas prices
- Firm reservation cost
- Firm and non-firm capacity options
- Higher heat content fuel
- Gas demand side management potential
- Gas-fired generation sensitivities to align with EIRP capacity expansion
- Design criteria alternatives 1-in-10 year event (vs. 1-in-25 year event)

Electric / Gas Integrated Resource Plan Schedule

	2019				2020		
	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	1 st Quarter	2 nd Quarter	3 rd Quarter
1 UPAC		EIRP & GIRP Process Overview / Assignment Scope and Deliverables	Reference Case / Inputs and Sensitivities / Goals & Guiding Principles	Evaluation Criteria	Evaluation Criteria & Preliminary Results	Review Results / Rate Plans using Scorecard / Provide Feedback	Finalize Scoring and recommendation
2 Utilities Board Direction		Assignment Scope and Deliverables		Reference Case / Inputs and Sensitivities / Goals & Guiding Principles	Portfolio Evaluation Criteria		Final Plan Recommendation and Approval
3 EIRP / GIRP Technical Work	Develop Schedule / Process	Gather Inputs / Develop Reference Case / RFI	Populate Models / Develop Sensitivities	Run Models / Incorporate Feedback	Risk Analysis	Preliminary Results	Final Results
4 Public Process		Energy Vision & IRP Process Education Stakeholder ID and Outreach	Public Workshop	Stakeholder Outreach and Updates	Public Workshop	Stakeholder Outreach and Updates	Public Workshop

Methods of Public Participation

- Attend Public Meetings:
 - **UPAC** - First Wednesday of each month at 8 a.m. in the Blue River Board Room on the fifth floor of the South Tower in the Plaza of the Rockies (121 S. Tejon Street).
 - **Utilities Board** - Thursday Sept 19, and generally the third Wednesday of each month thereafter at 1 p.m. in the Blue River Board Room on the fifth floor of the South Tower in the Plaza of the Rockies (121 S. Tejon Street). Check Agendas and Minutes at CSU.ORG to confirm dates and times.
 - **Workshops**
- Website: <https://www.csu.org/pages/eirp-r.aspx>
- Surveys
- Email: energyvision@csu.org



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