Vision

CEO Dreyspring

This slide deck was modified to remove references to LPEA's long term power supply contract with Tri-State. Because this represents the CEO's vision and this will be evaluated by the LPEA Board of Directors in the coming months, it was appropriate to remove those slides.

October, 2017

Mission

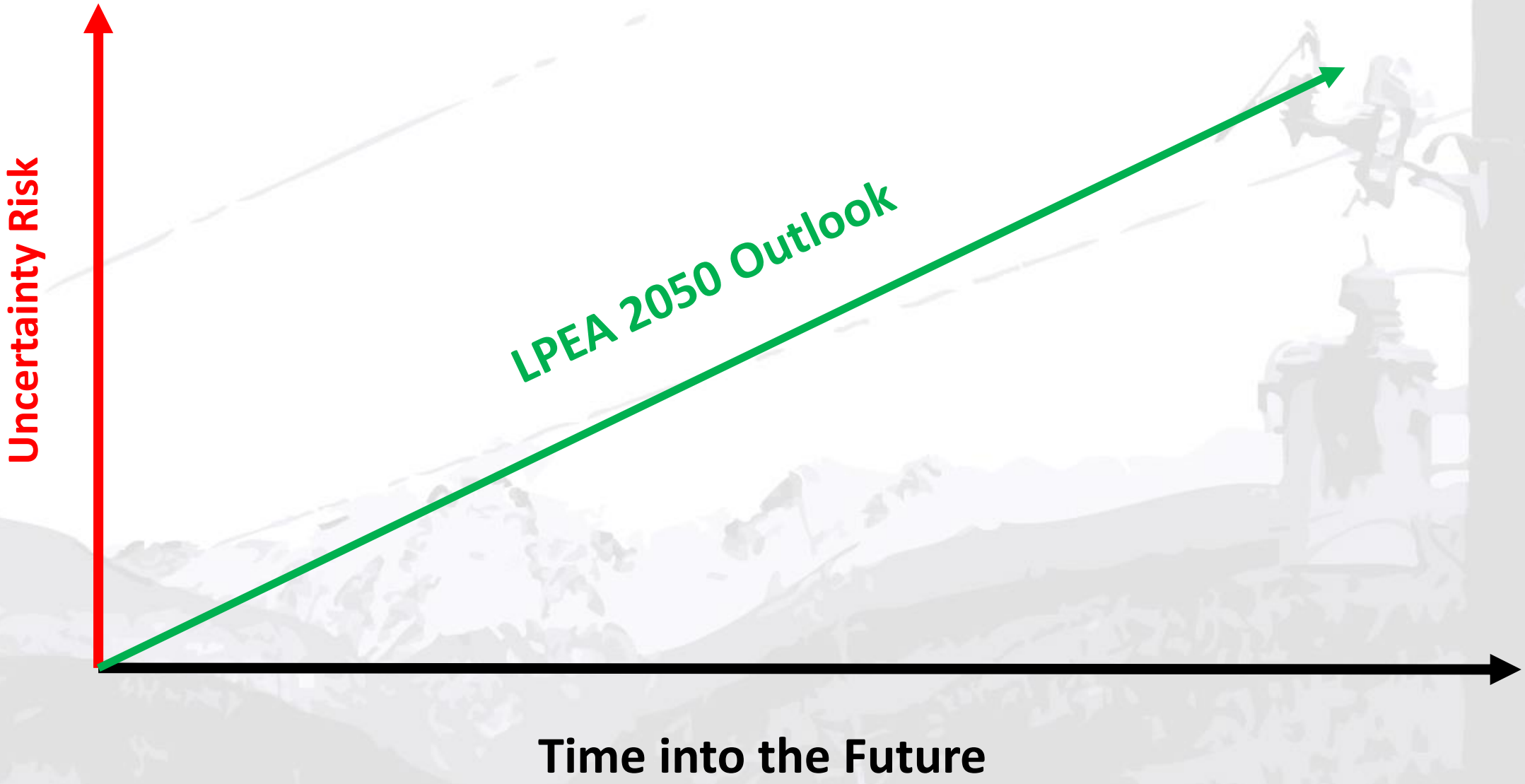
- LPEA provides its members safe, reliable electricity at the lowest reasonable cost while being environmentally responsible.

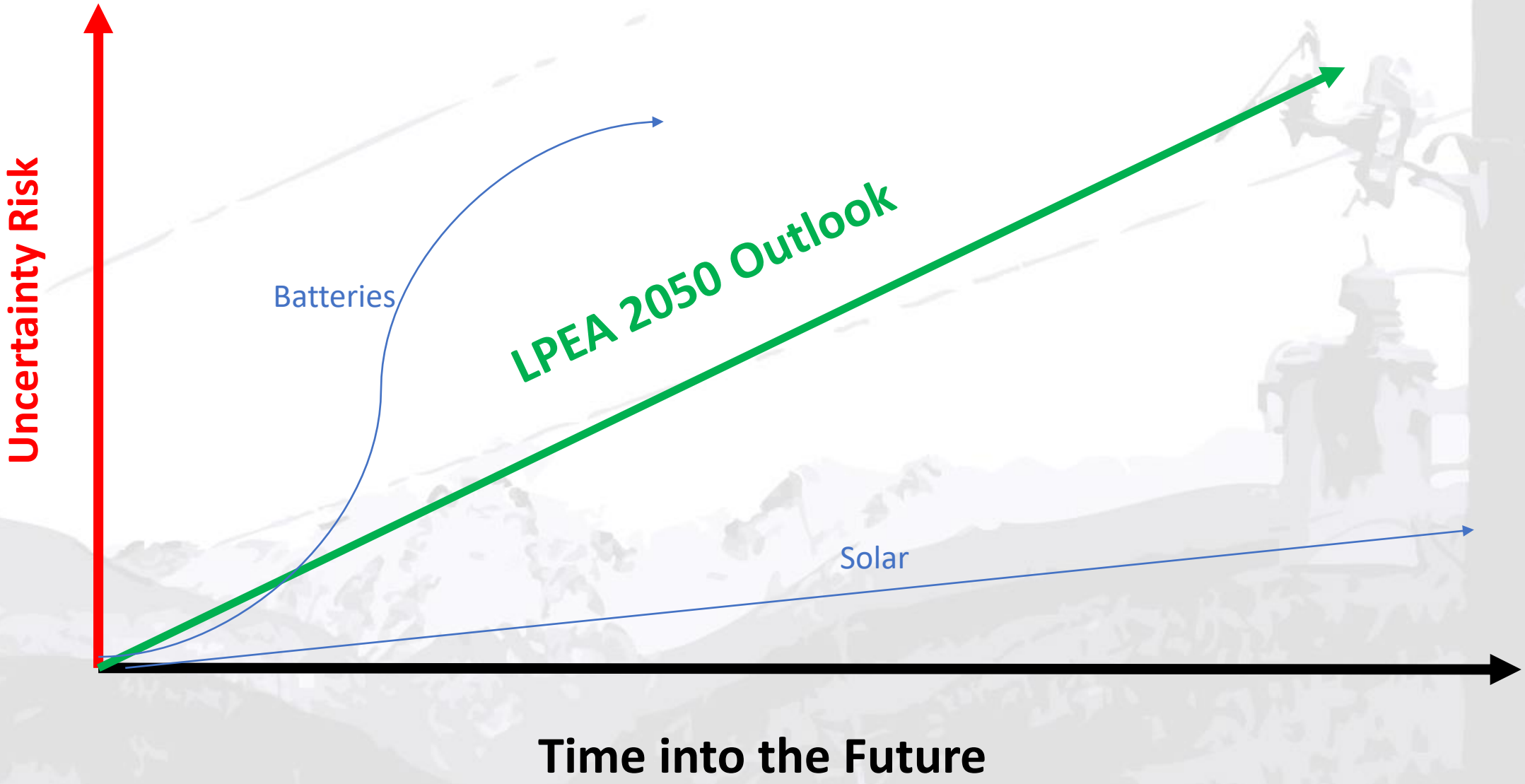
Vision

- Shaping the future by building trustworthy community partnerships as an innovative forward-thinking industry leader, delivering excellence in our member-owned cooperative.

2050 Vision – Now, Next, Then

- Environmental assessment – to vision what we should do now to prepare for 2050, we need to vision what 2050 looks like. What is happening today that foretells our industry and market in 33 years?
- Vision is not about our past.
- Vision past the political winds of change.
- What now? What next? What then?

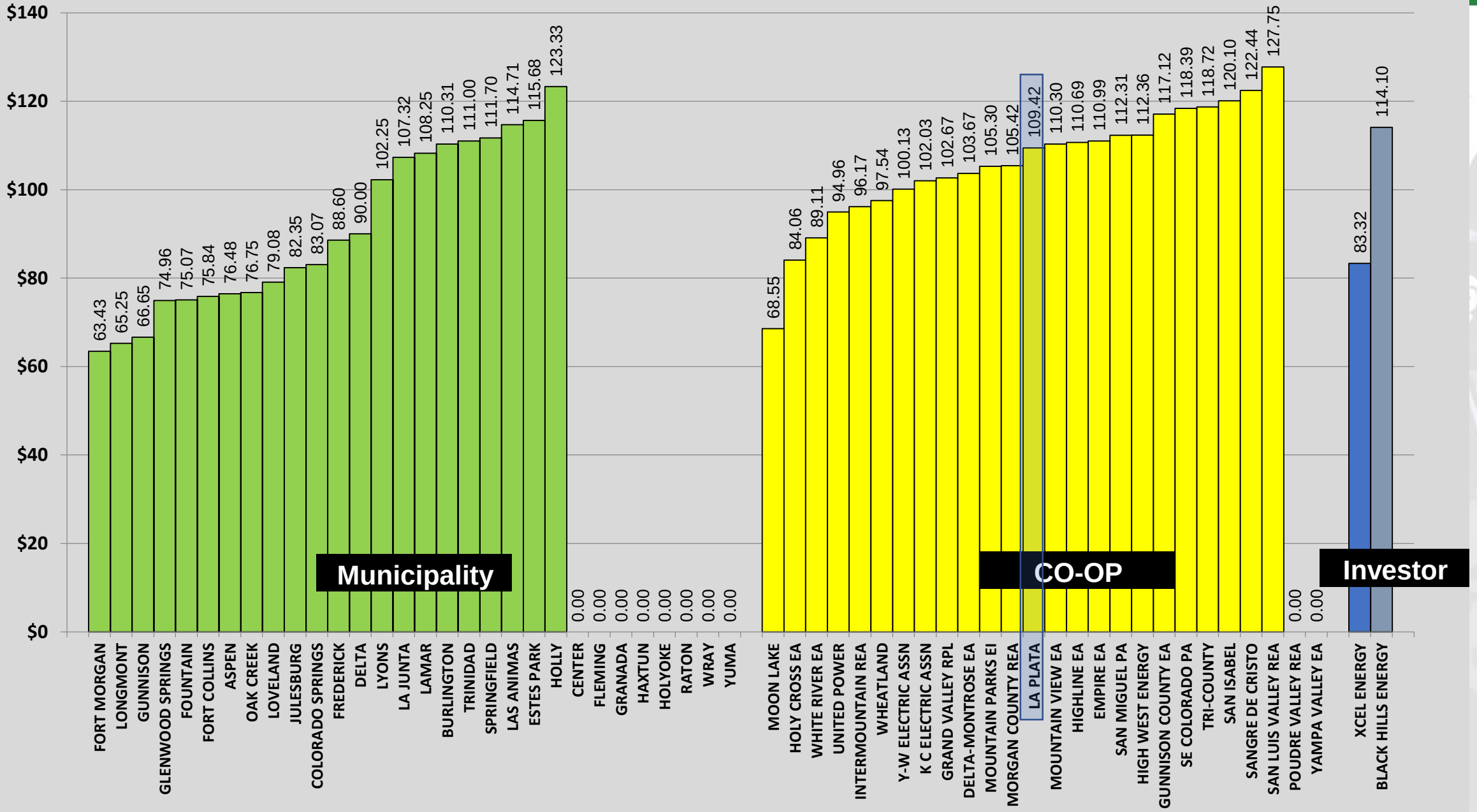

Uncertainty Risk
LPEA 2050 Outlook
Time into the Future


Uncertainty Risk
Batteries
LPEA 2050 Outlook
Solar
Time into the Future

Background on the "Now"

- Rates
- Energy Markets
- Renewables and Distributed Generation

CAMU Residential Survey
July 2017 - Cost of 700 kWh



CAMU Large Commercial Survey
July 2017 - Cost of 45,000 kWh + 130 kW

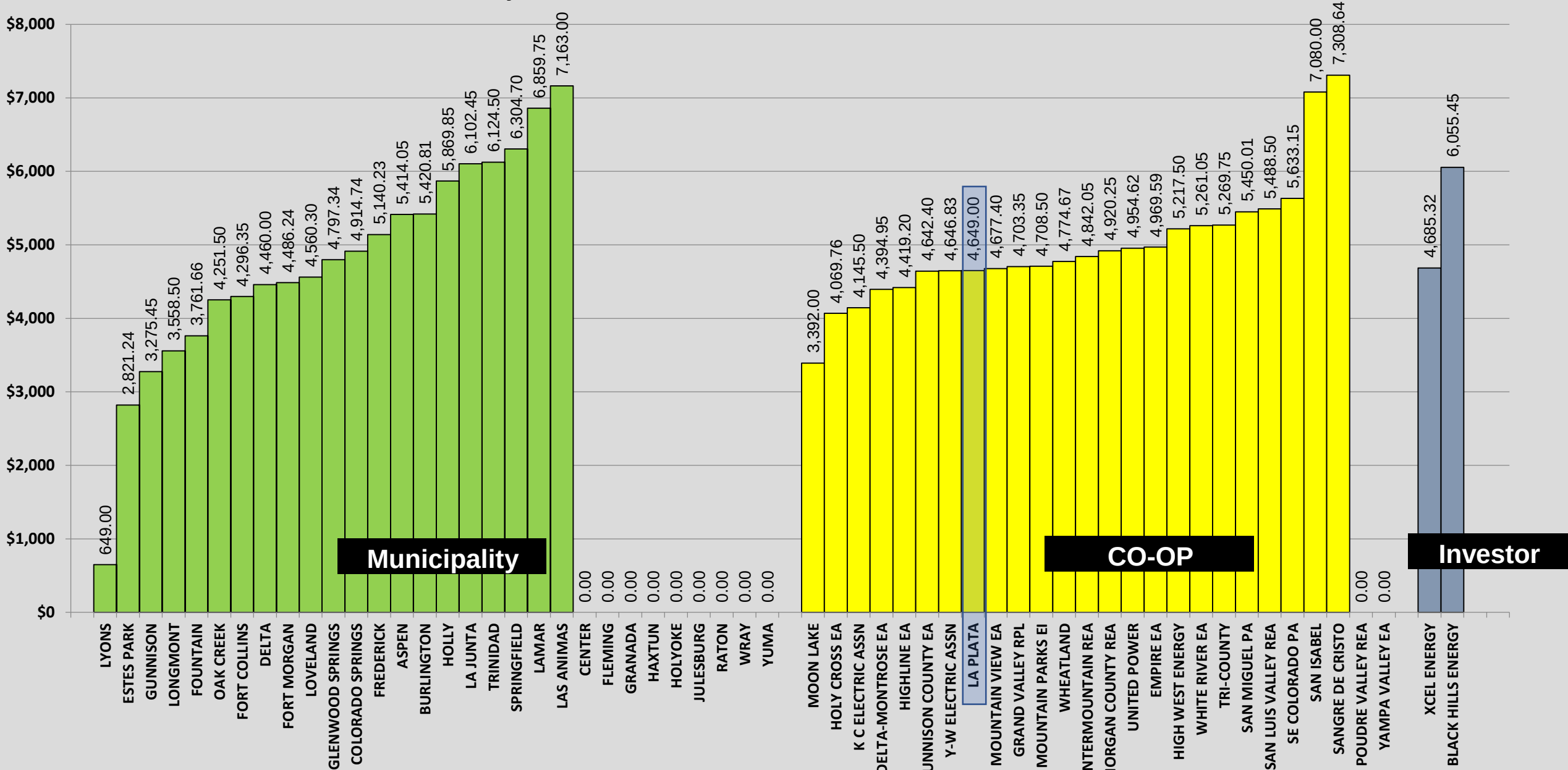


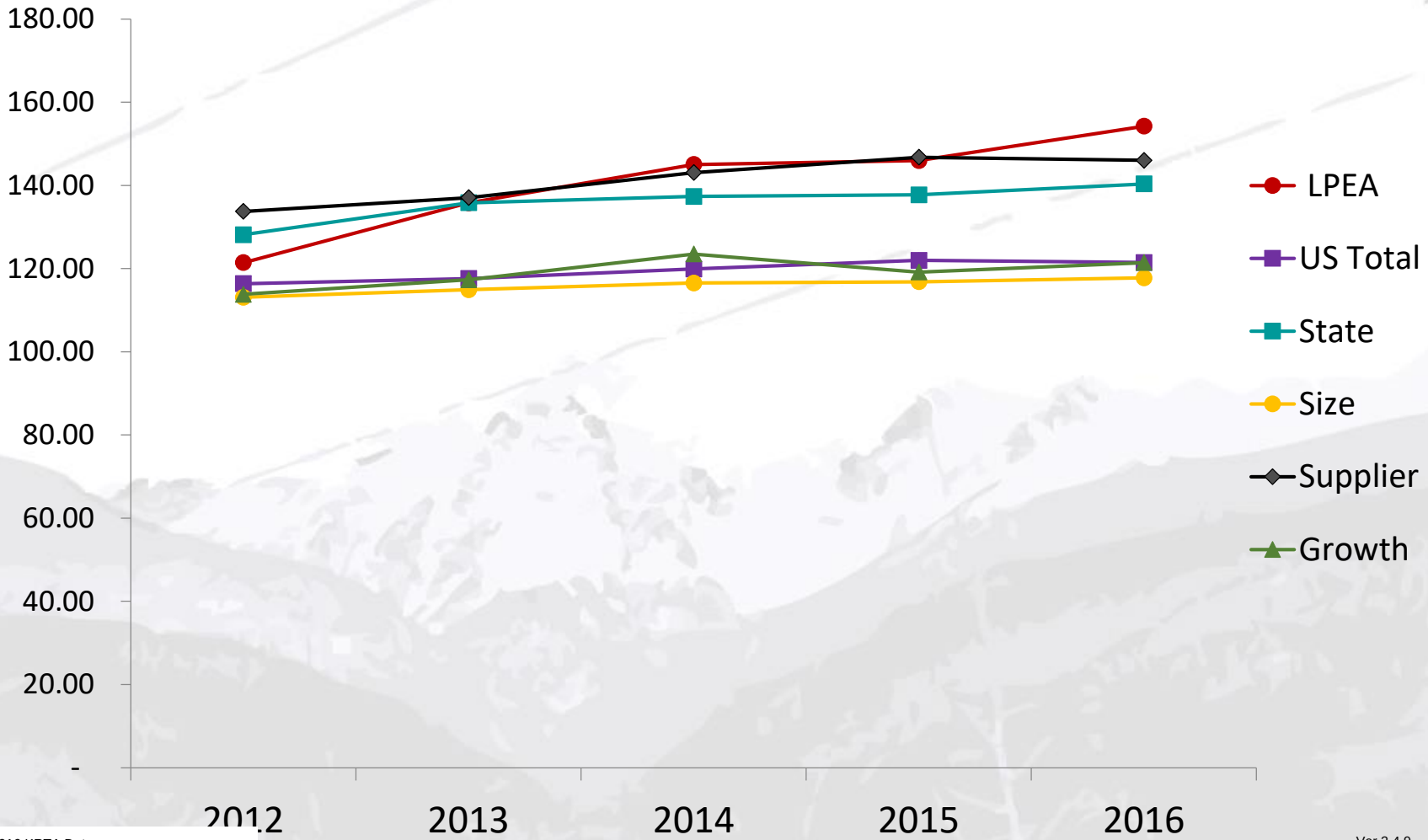
Table 5.6.A. Average Price of Electricity to Ultimate Customers by End-Use Sector,

by State, June 2017 and 2016 (Cents per Kilowatthour)

	Residential		Commercial		Industrial		Transportation		All Sectors	
Census Division and State	June 2017	June 2016	June 2017	June 2016	June 2017	June 2016	June 2017	June 2016	June 2017	June 2016
Mountain	**12.34**	**12.05**	**10.26**	**10.13**	**7.09**	**6.78**	**10.43**	**9.77**	**10.15**	**9.90**
Arizona	12.65	12.54	11.23	11.20	6.93	6.39	10.71	9.92	11.34	11.09
Colorado	12.75	12.56	10.72	10.25	7.61	7.41	10.86	9.92	10.57	10.30
Idaho	11.42	10.13	9.35	8.31	7.87	7.66	--	--	9.17	8.47
Montana	11.73	11.59	10.49	10.50	5.31	5.15	--	--	9.15	9.12
Nevada	11.64	11.40	7.59	7.92	7.31	5.98	8.54	7.81	9.13	8.82
New Mexico	13.41	12.22	10.93	10.12	6.02	6.18	--	--	10.16	9.51
Utah	11.48	11.51	9.48	9.78	7.02	7.45	10.20	9.90	9.41	9.71
Wyoming	12.21	11.81	10.22	9.77	6.90	6.97	--	--	8.38	8.29

Source -https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a

RATIO 38 --- RESIDENTIAL REVENUE PER KWH SOLD (MILLS)



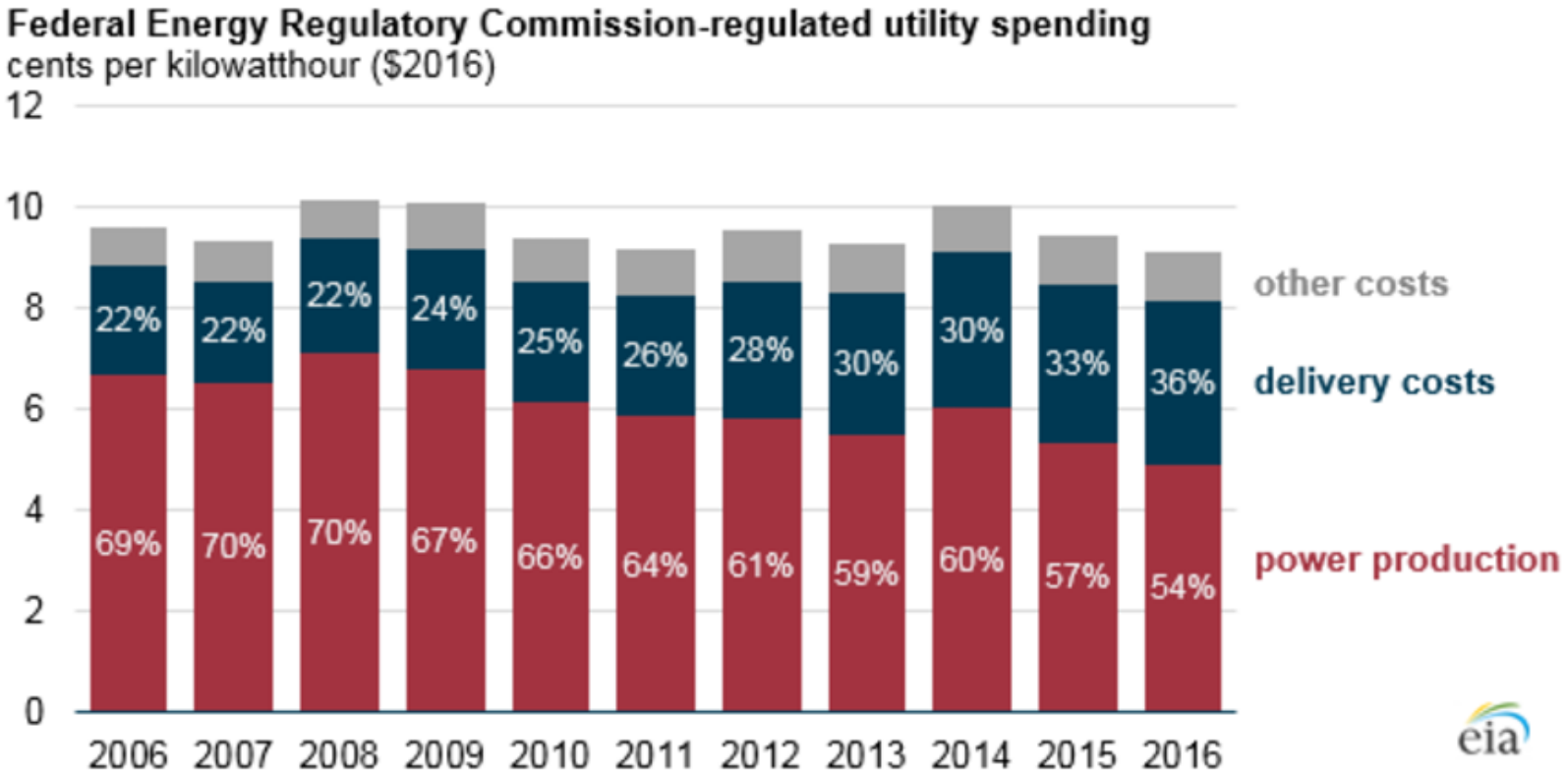
2016 KRTA Data

2016 Key Ratio Trend Analysis (KRTA)
La Plata Electric Association, Inc. (LPEA)

		US Total			State Grouping			Consumer Size			Major Current Power Supplier			Plant Growth (2011-2016)		
Year	System Value	Median	NBR	Rank	Median	NBR	Rank	Median	NBR	Rank	Median	NBR	Rank	Median	NBR	Rank
BASE GROUP (RATIOS 1-5)																
RATIO 38 --- RESIDENTIAL REVENUE PER KWH SOLD (MILLS)																
2012	121.44	116.38	813	322	128.16	22	15	113.09	55	19	133.75	44	34	113.82	189	63
2013	135.80	117.62	815	148	135.82	22	12	114.93	55	5	137.06	44	25	117.32	234	32
2014	145.02	119.92	813	93	137.36	22	8	116.53	57	3	143.08	44	21	123.50	117	16
2015	145.97	121.98	811	100	137.73	22	8	116.82	56	4	146.77	44	23	119.17	117	11
2016	154.23	121.46	809	72	140.35	22	7	117.78	60	2	146.05	44	17	121.42	31	8

FEUS $112.80
Aztec $120.75

Electricity prices reflect rising delivery costs, declining power production costs



Source: U.S. Energy Information Administration, Federal Energy Regulatory Commission (FERC) Financial Reports, as accessed by Ventyx Velocity Suite

Over the past decade, retail electricity prices have not closely followed the costs of fuels used to generate electricity, such as coal or natural gas, mainly because of changes in the other costs involved with producing and delivering electricity in the United States.

Source - https://www.eia.gov/todayinenergy/detail.php?id=32812

What does the rate comparison data tell us?

- Comparatively speaking, LPEA rates are in the upper range when compared with other electric coops and muni's. Unattended to, rates become their own existential threat to LPEA.
- LPEA wires costs has only so much cost to cut without impairment of service
- Tri-State wholesale costs are expected to gradually increase in the short run market that's long in generation, which creates more rate risks for LPEA.
- High retail electric rates drive alternative penetration and statutory change, (retail dereg).
- Commercial Rates reflect costs, minimal cross-rate subsidy.

Energy Markets

- Bulk Power Deregulation – it's coming
- Retail deregulation – the higher the rates, the greater the likelihood
- Colorado is long on generation; with expected population growth and the correlating load growth that goes with it. As the market contracts, prices will rise.

DG

Durango 100 percent renewable by 2050?

Petition calls for city to reach local renewable energy goal

By Mary Shinn Herald staff writer

Friday, Sept. 1, 2017 9:01 PM Updated: Friday, Sept. 1, 2017 9:29 PM

Follow @maryshinn

Renewables

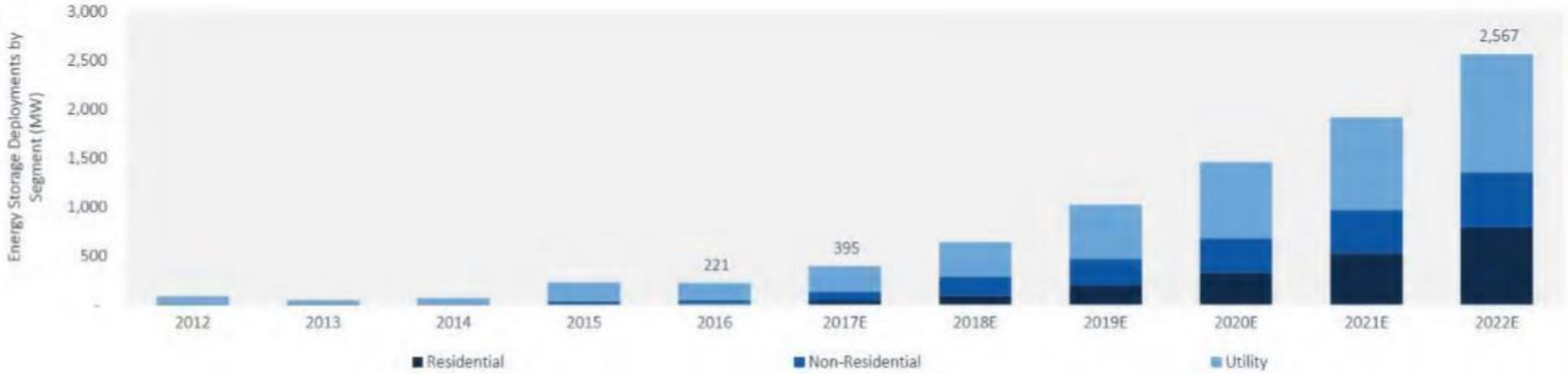
- LPEA's members expect and will continue to deploy DG, most likely solar.
- Renewable prices are declining
- LPEA has proven DG can be effective, if the physics and economics are properly managed
- Solar and wind, while inexpensive energy producers, are only intermittently available to service the demand of the grid by electric consumers.

Storage

- Indirect role in reliability, indirectly helping critical and sensitive loads ride through electric service anomalies.
- Current growth spurred by EV, to large extent.
- Market entrance for residential
- Utility deployment for some distribution and transmission ancillary service support, (volt, VAR, frequency) and in lieu of some line extension or system improvements on a strictly exploratory evaluation basis or positive cost-benefit.

Rocky Mountain Utility Efficiency Exchange

U.S. Energy Storage Deployment Forecast



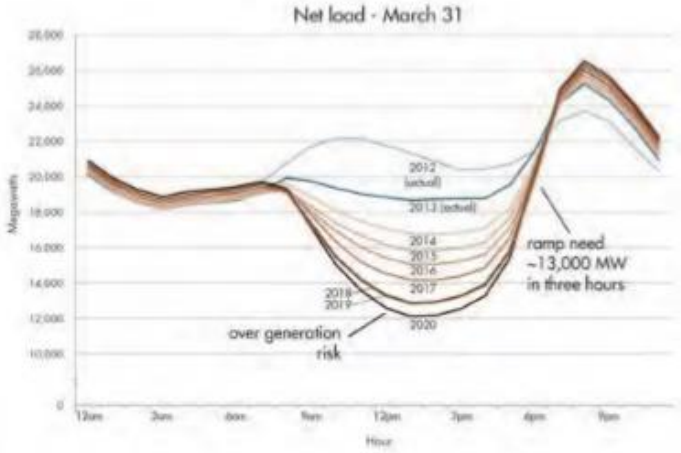
Source: GTM Research/ESA|US Energy Storage Monitor: June 2017

35 GW of Energy Storage by the year 2025

Rocky Mountain Utility Efficiency Exchange

What Kind of Issues Can Storage Address?

- Duck Curve Challenges
  - Over generation during the day and dramatic ramping curves at day-end
  - Storage can serve the ramp and flatten the "belly"
- Renewables Firming
  - Customers don't turn off AC or stop a production plant because it is cloudy
  - Battery energy storage has been proven to effectively smooth intermittent renewable generation



California Independent System Operator, https://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf, 2016 p.3.

What (to do) now?

- Manage costs to "hold the line" on rates
- Optimize reliability resources to "best in class"
- Track and know technological developments and how they might play a role at LPEA

Background on the "Next" (2020-2030)

- The energy future
- Transmission - Update
- Electric vehicles – it's now beyond commercial introduction, will be refined and mass produced
- Microgrids

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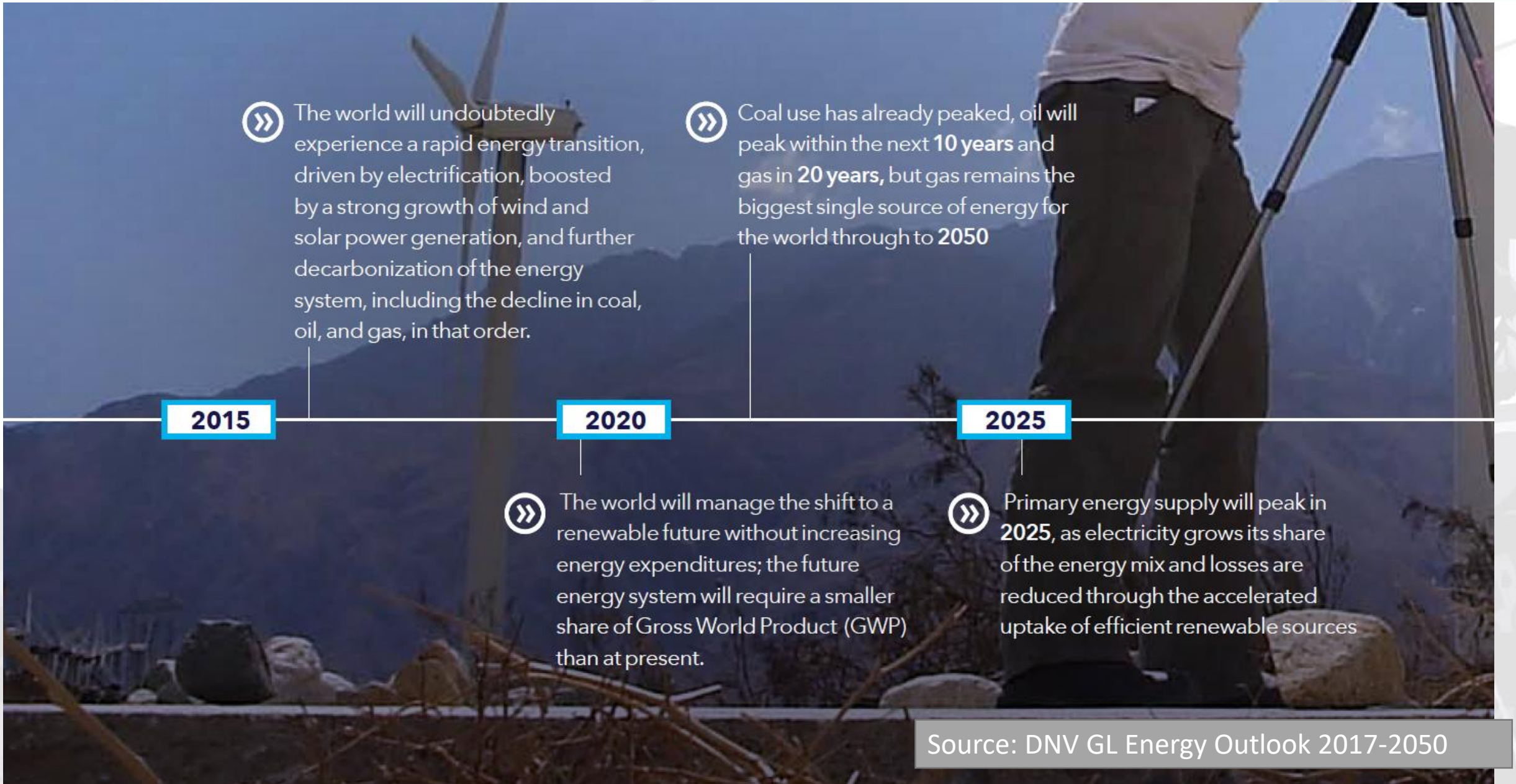
Shaping the future by building trustworthy community partnerships as an innovative, forward-thinking industry leader, delivering excellence in our member-owned cooperative.



Source: DNV GL Energy Outlook 2017-2050

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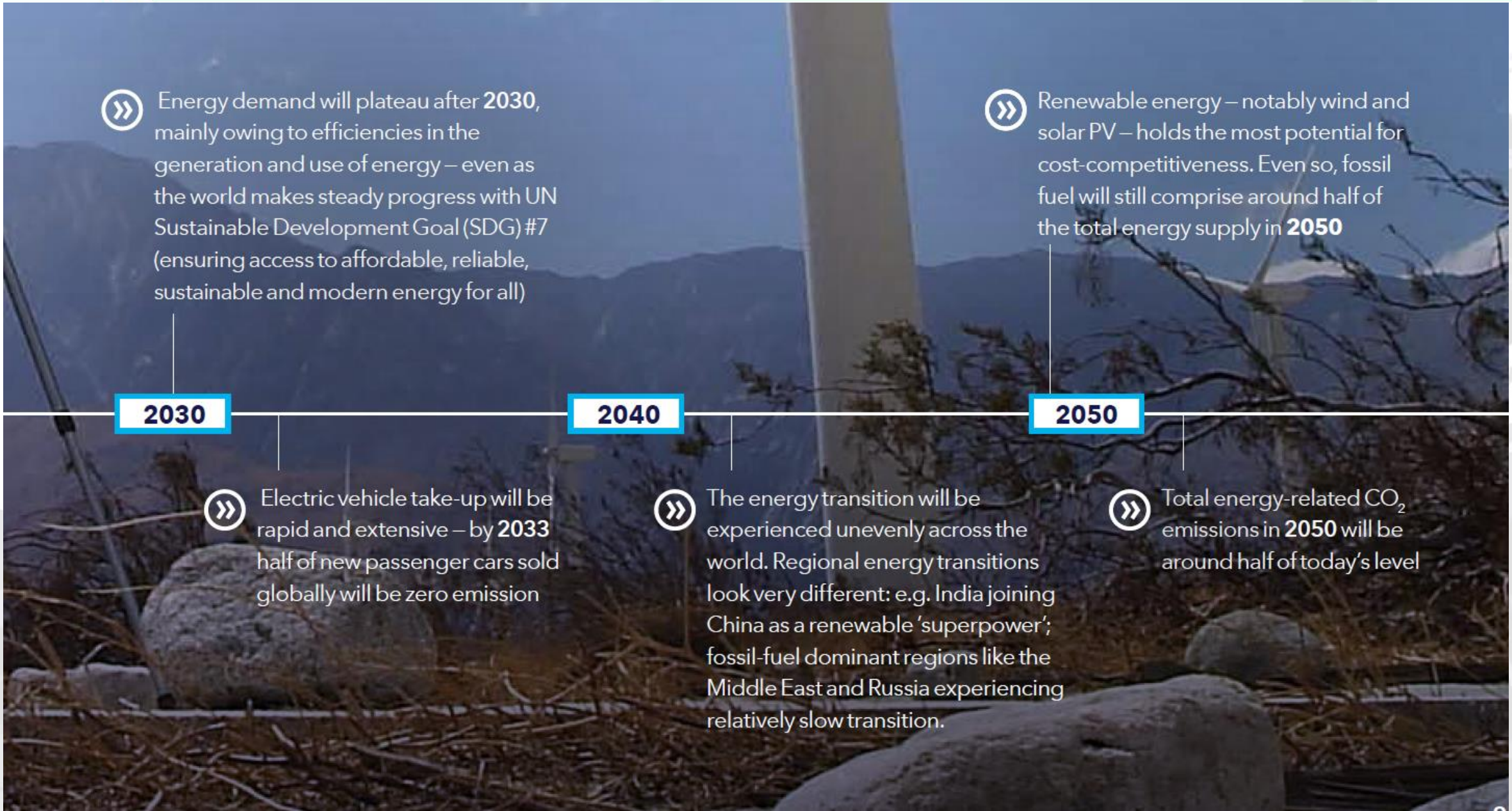


Energy demand will plateau after **2030**, mainly owing to efficiencies in the generation and use of energy – even as the world makes steady progress with UN Sustainable Development Goal (SDG) #7 (ensuring access to affordable, reliable, sustainable and modern energy for all)

2030

Electric vehicle take-up will be rapid and extensive – by **2033** half of new passenger cars sold globally will be zero emission

2040

The energy transition will be experienced unevenly across the world. Regional energy transitions look very different: e.g. India joining China as a renewable 'superpower'; fossil-fuel dominant regions like the Middle East and Russia experiencing relatively slow transition.

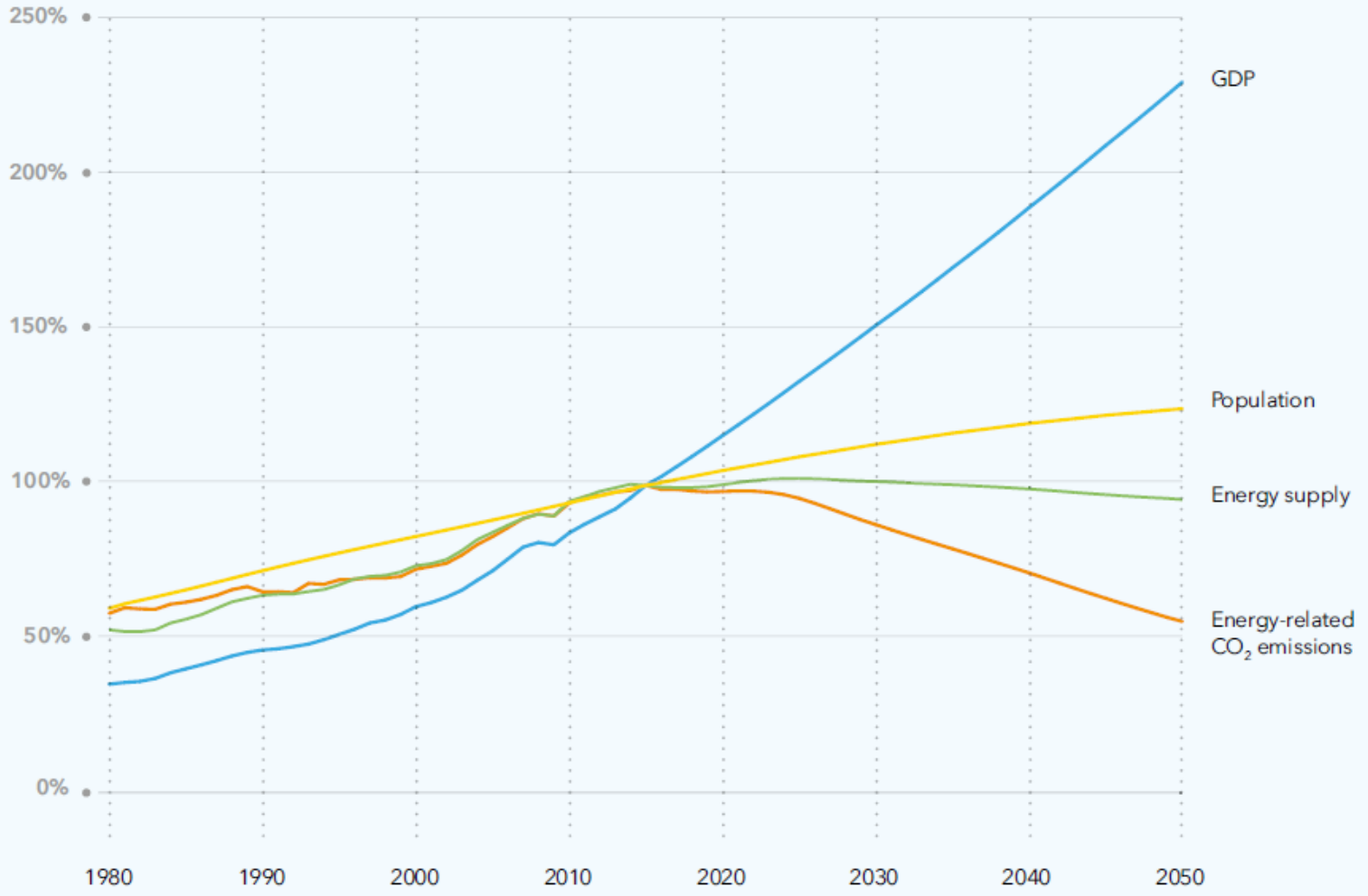
Renewable energy – notably wind and solar PV – holds the most potential for cost-competitiveness. Even so, fossil fuel will still comprise around half of the total energy supply in **2050**

2050

Total energy-related CO_2 emissions in **2050** will be around half of today's level

FIGURE 1. THE DECOUPLING OF ENERGY FROM KEY PARAMETERS

Units: **Percentage of 2015 level**



Source
DNV GL Energy Outlook 2017-2050

SPP RTO footprint (as of TS press release 9/22/17)

What's wrong with this picture?

1. PNM, AZ, Utah missing
2. Seams issue
3. Pancaking issue

LPEA Transmission Assets

- WECC TO
- WECC TOP?
- RTO membership?
- Ownership and operation of assets – LPEA must be a player in the transmission bulk power market if we're to be effective in cost effective alternatives to TS if the buyout is a possibility.

Electric Vehicles

- GE says there will be 18 different EV models by 2023
- Over 40 sold in Durango in 2017
- What are the opportunities for consolidating renewable production with EV consumption? (hint – TOU)

Microgrids

- Not a panacea
- Variety of applications
- Microgrids are a "wires" solution with various sources and loads
- Think of electric coops as microgrids.

Microgrid opportunities – contingent upon… (If-then)

- Innovate microgrid concept that enables/empowers Durango members to achieve their renewable objectives.
- Innovate microgrid concept that enables the SUIT to achieve their sovereignty over their energy future.
- Innovate microgrid solution that enables Archuleta County to achieve its reliability and autonomy objectives
- Innovate microgrid solution that enables Fort Lewis College to provide leadership in research and development to help solve the grid challenges LPEA faces.

What does 2030-2050 look like? (What Then)

- Incremental transmission owned by non-traditional utility capital.
- Transmission is alternative to large, central generation projects.
- Are there options for export of locally produced renewable energy? Only the extent to which producers have effective transmission access.

Confluence and questions

- Electric vehicle uptake happens simultaneously with renewable uptake to electric grid. While solar prices are declining, solar has to become more productive, energy output and time relative availability.
- What happens to bulk power flow if Craig goes away completely?
- With the lack of steel transmission infrastructure for natural gas, to what degree will NG supplant solid fuel plants, like Texas, in Colorado?
- Does the quest for all-renewable electric sourcing spawn an all-electric energy model?

Vision

- Along parallel paths, LPEA must move to increase cost effective and diversified, price sensitive DG. Diversity in supply reduces risks. Don't bet the coop on one solution.
- To create a work environment and culture for employees that rewards their hard work in serving LPEA's members and rewards their innovation in improving our serve.
- LPEA must provide innovative data and information management tools for members, especially in energy use management and reliability. LPEA will be the leader in reliability performance by maximizing employee capability with technological exploitation.

Transmission (Subject to board approval of business plan)

- Establish transmission affiliate (On or after 2019)
- Asset transfer for transmission assets and dispatch
- Transfer transmission funds to affiliate or reserve for transmission expenditures.
- Establish board of governance consisting of mgmt and LPEA BOD observers

Distribution Automation and optimization

- ERMCO transformers – GridBridge Energy Router
- Improved coordination and sectionalizing
- Proactive versus reactive maintenance to improve power quality delivery.

Affiliate

- What is LPEA's ownership expectation for FastTrack?
  - To engage with LPEA's membership community and play a leadership and service role in delivering improved and competitive telecommunications services.
  - To be profitable and provide year-over-year cash back to LPEA and EEA if not used for retail service in LPEA and/or EEA's territories.
  - To manage growth within LPEA and EEA's service territory while managing the risk associated with retail services.
  - To grow its core middle mile service.
  - To position itself as a valuable entity from which LPEA and EEA can derive financial benefit.

Vision for the board

- John F. Kennedy, Profiles in Courage
- Legacy is about achievement
- Look for the solutions that exist in compromise.

Advocacy

- As bulk power deregulation evolves, we must be involved, learning, participating and advocating for our member's interest.
- As state and federal legislation is introduced or involved, we must participate and advocate for our members interest.

DG and renewables

- With solar prices declining, use TS Policy 101 and 118 to assist members with local DG projects
- Continue PV interconnection behind meter

Electric Vehicles and ETS

- LPEA must learn how to leverage EV load and storage. TOU rate structure can help with that evolution.
- LPEA must leverage thermal storage, (ETS, water heaters, etc.), through TOU pricing.
- LPEA must look for opportunities to partner EV loads, as well as other potentially disruptive energy consumers, and renewable generation through technology and pricing
- LPEA needs to reconsider pricing virtual net metering and net metering

PV

- Grid Parity – PV rates should reflect LPEA expenses
- Follow battery technology evolution
- Identify derating, renewal/replacement, reclamation needs

2050 wires company – it's about the people

- Doesn't matter what we're billing/charging in 2050, it's all about the service we provide.
- The 2050 LPEA member will value above all else, the exceptional service their cooperative employees provide. Members needs and desires drive the business model in 2050.
- Nimble, adaptive organization remains LPEA's biggest strength in 2050
- LPEA's members trust all of the employees in the organization to do what's in the members best interests.
- LPEA is a wires company now, and will most likely be a wires company in 2050 (Any vision that excludes LPEA as wires company in 2050 MUST begin collecting decommissioning funds.)

Where do we go from here?

- Ruminate
- Revisit
- Keepers go to O&I's, (catch), everything else, (release)

Questions?