Objective & Key Takeaways

I. On October 8th Market Experts and Utility CEOs will discuss the progression toward a new model.

- Is the existing business model of the utilities obsolete or soon to be obsolete?
- If yes, what is the cause?
- Alternatively, is this just progression of time and evolution of technology that every industry goes through?
- ~~Are we experiencing PURPA all over again?~~

II. This presentation will give you context for the issues that will be discussed throughout the October 8th en banc.

Historical Context: Federal & State Energy Policy

- Federal and state energy policy are significant drivers of change over last 30 years
- Federal and state policies have expanded energy market participants
- California utilities continue to have the obligation to serve (since 1910)

Key Historical Federal Policy

- 1978 – Public Utility Regulatory Policies Act (PURPA)
  - Opened Wholesale Markets to Non-utilities
- 1992 – Energy Policy Act of 1992
  - FERC orders transmission owners to carry power for other wholesale parties (1996 - Leads to FERC Order 888/889)
- 2010 – FERC Order 1000
  - Allows competitive new transmission

Key Historical State Policy

- 1996 - AB 1890
  - Authorizes the CA ISO, requires CA Utilities to divest most of their gas-fired generation and required them to purchase power from CA Power Exchange markets.
- 2001 – AB1X direct access suspended
- 2006 - AB 32 (Global Warming Solutions Act of 2006)
  - Requires reduction of CA's GHG emissions to 1990 levels by 2020
- 2010 - Senate Bill 695 (Ratepayer Protection Act)
  - Re-instate direct access via phase in plan

Recommend deleting before 2020 column and have one column titled future with ? Or dele

Utility Roles Across the Supply Chain

	Past 10 years	Today	Before 2020	2020 and beyond
"Centralized" Generation	Mostly UOG. Some IPPs.	Competitive (IPPs). Some UOG.	Competitive (IPPs). Some UOG.	Competitive (IPPs). Little UOG.
Centralized Transmission	Natural Monopoly.	Mostly Natural Monopoly.	Increasingly Competitive.	
Market Structure	Integrated. Cost Pass-through.	Competitive wholesale markets.	Competitive wholesale & capacity markets	Competitive wholesale & capacity markets; Utilities balance (power quality)
Commodity Services	De-coupled. Closed.	De-coupled. CCA open. Limited DA[(2)]	De-coupled. CCA active. Limited DA	De-coupled. CCA and DA expanded.
Distribution Infrastructure	Natural monopoly (1-way flow, labor).	Natural monopoly (Some 2-way flows, data).	Natural monopoly (2-way flows, data, coordination, trades).	
"Decentralized" Generation	Limited CHP opening.	CHP, Open Solar.	CHP, Solar, some batteries & fuel cells	Multi-technology nanogrids
Behind the Meter	None.	Limited role by utilities.	Utilities play a "fair" role, post permission	Utilities play an active "fair" role

FOR DISCUSSION

PRELIMINARY

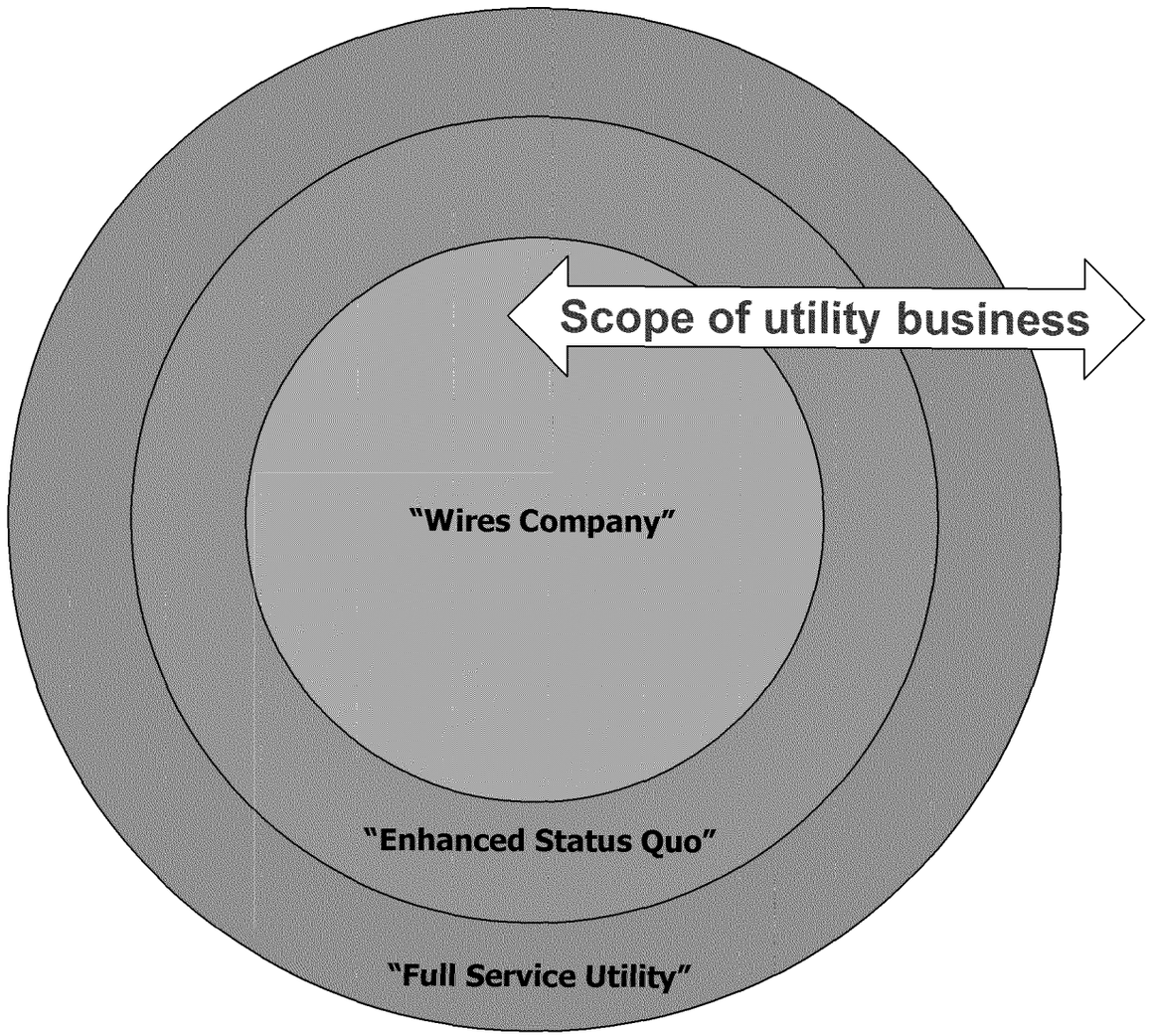
POTENTIAL ISSUES IN THE FUTURE

- **Infrastructure Investments:** How will infrastructure investments occur in the future and be paid for?
- **Generation:** How will electricity be produced and delivered in an increasingly decarbonized system? **Central station or distributed generation?**
- **Energy Markets:** What will the wholesale energy markets of the future look like?
- **T&D:** Who will coordinate, plan, design, and build the transmission and distribution system network in the future?
- **Reliability:** Who will ultimately be responsible for reliability?
- **Customer:** How will changes in the utility business model impact the consumer?
- **Utility Business Model:** How quickly will the transition from traditional utility business model to something different occur?
    - Will the transition be incremental or sudden?
    - Given the regulatory uncertainty regarding recovery and rates, how can the regulatory environment evolve to allow the utility to make investments and be more innovative?
    - **What is the future vehicle to achieving policy objectives if the utility business model changes?**

FOR DISCUSSION

PRELIMINARY

POTENTIAL BUSINESS MODELS IN 2030



FOR DISCUSSION

PRELIMINARY

POTENTIAL BUSINESS MODELS IN 2030

"Wires & Meters Operator"

- Focus on ownership and operation of distribution networks
- Provider of reliability, standby, and power quality services
- Limited energy procurement for customers – provider of last resort
- Open, standards-based architecture supporting integration of distributed resources and micro-grid operations
- Will not depend on the volumetric sales of energy

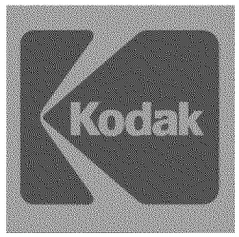
"Enhanced Status Quo"

- Similar to today's world
- Continue procurement functions
- Primary focus on wires, including transmission – with structural changes as defined in "Wires Company" scenario
- Selected customer focused services under regulated rates and standards, primarily offered for large commercial and industrial customers
- Current rate structure issues are resolved

"Energy Service Utility"

- Utilities provide a wide range of services, including behind the customer's side of the meter
- Utilities directly compete with unregulated market players
- New performance based incentive mechanisms that is aligned with customers' changing needs and values and reflects the changed utility risk profile

Other Industries – Lessons Learned



UNITED AIRLINES

What went wrong?

- Lack of ability to adapt to a profound market shift *(USPS, Kodak)*
- Constrained by existing or previous government mandates/regulation *(USPS, Airlines)*
- Did not invest across enough developing technologies or services *(USPS, Kodak)*
- Lack of focus on providing optimal customer service facilitates customer departures *(Airlines, USPS)*