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1. Western Developments
 2. Ideas on CEDA's role

Doug Larson

Western Interstate Energy Board

Western Developments (1)

▶ Western Governors

1. Western Renewable Energy Zone (WREZ) project (extra slides)

- ▶ Interconnection-wide
- ▶ Latest wind/solar mesoscale data
- ▶ Model to enable utilities, regulators and others to evaluate the delivered price of power from specific zones and thus encourage transmission projects to priority zones

2. Western Governor/CEO dialogue

- ▶ April letter from 15 western utility CEOs to Governors and PUCs (APS, Avista, BPA, CA ISO, Sierra Pacific, PacifiCorp, PG&E, PGE, PSE, PNM, SCE, SMUD, SRP, SDG&E, Unisource)
 - Fully integrated interstate grid
 - Challenges of meeting load growth, rising cost of all generation options, expanding an integrating renewable generation, and adapting to carbon limits
 - Massive R,D&D needs
 - Other (e.g., tradable Renewable Energy Certificates Market)

Governors' response to CEOs

- ▶ May response of western Governors
 - Concurred with the challenges we face
 - Agree on need for collaboration
 - Need forum for utility resource planners and states
 - Cited ongoing work on: energy efficiency, technology development, transmission expansion, and integrating renewables
- ▶ June 30 Governors meeting with 4 CEOs in Jackson Hole
 - Need price for carbon
 - Need "moon shot" R,D&D program
 - CEO study of transmission needs for renewables by E3
- ▶ Governors will focus on building this dialogue

3. WGA electricity resolution (08-8)

<http://www.westgov.org/wga/policy/08/electricity8-8.pdf>

- ▶ Use WREZ findings in LSE resource choices, transmission planning, FERC queue reform, energy corridors, coordination on transmission siting
- ▶ Need flexible generation to complement wind/solar
- ▶ May need virtual consolidation of Balancing Authorities
- ▶ Evaluate large scale penetration of renewables

Other Western Developments

- ▶ Other developments
 - NREL/WestConnect solar/wind integration study
 - ▶ August 14 meeting
 - SWAT Renewables Task Force (NM, AZ, NV)
 - Other state renewable zone identification processes (California RETI process, Nevada, New Mexico wind collector, Arizona utilities study)
 - WECC 2008 low carbon scenario transmission study

WECC Transmission Modeling of Low-Carbon Scenario

- ▶ WIRAB (states/provinces) asked WECC to study transmission needs associated with a scenario to reduce CO₂ emissions by 15% from 2005 levels
- ▶ Three-tier analysis
 - 15% renewables penetration
 - Significant energy efficiency improvements
 - Carbon adder to flip coal/gas dispatch order
- ▶ Results due in the fall

CEDA Roles

▶ Current roles

- Help finance new transmission
- Convener

▶ *Additional roles?*

- *Evaluator of long-term effects of transmission expansion*
- *Cajoler to consider long-term (10-40 years) effects of transmission expansion*

Limits of Current Transmission Planning

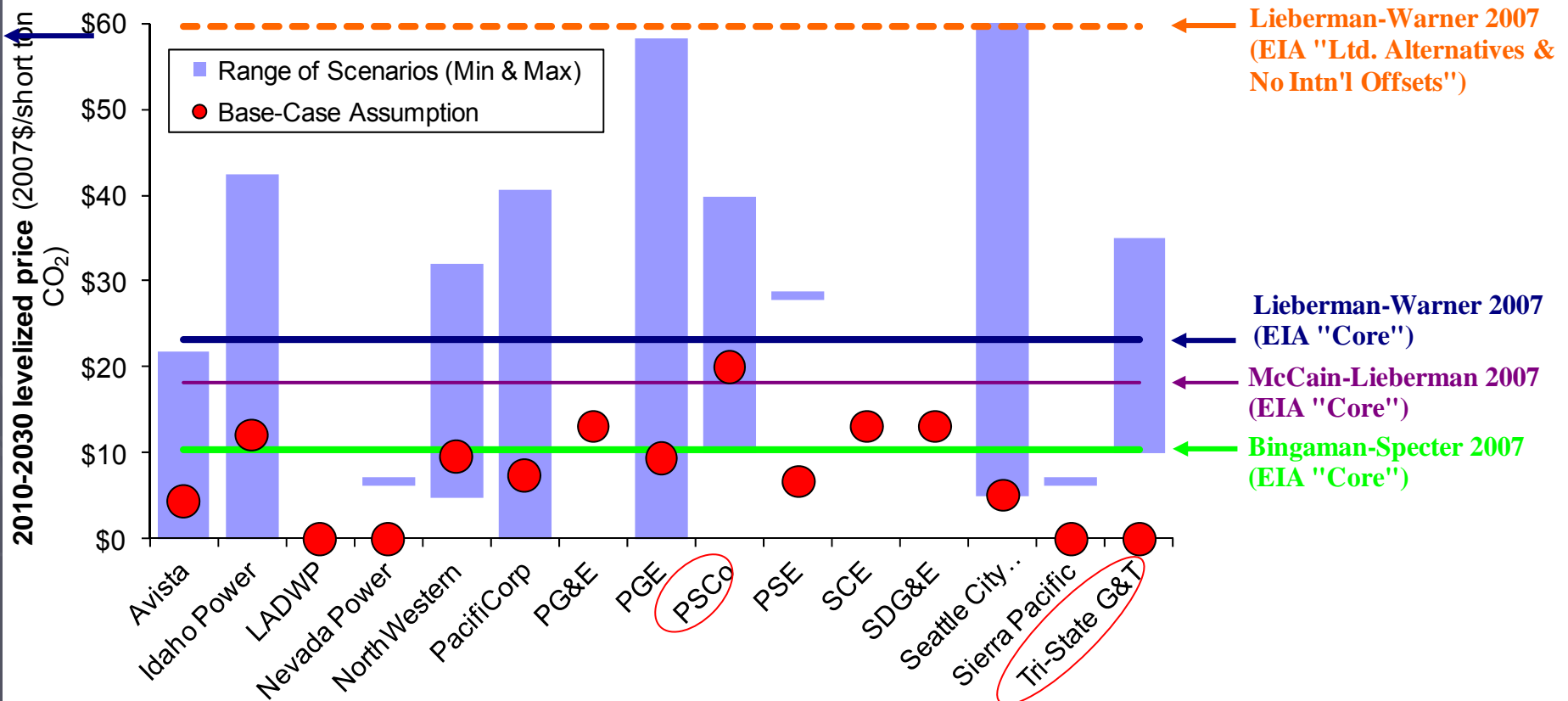
- ▶ Transmission analysis typically done over 10 year period, but transmission assets last 40 years+
 - Hard to estimate future generation types and locations beyond 10 years
- ▶ 10-year study period captures the cost of wires but fails to adequately evaluate future risks and benefits
 - Benefits of access to location-constrained generation extends beyond 10 years
 - ▶ Generation location known
 - ▶ Hedge against uncertain carbon costs
 - ▶ Huge economies of scale in transmission
 - ▶ Land owner opposition to multiple lines to same area

CEDA as Evaluator of the Long-Term

- ▶ CEDA could evaluate the impact alternative transmission expansion:
 - Over 10-40 year time horizon
 - Use different scenarios over the long-term (e.g., stringent carbon emission limits, high/low gas prices, technology advancement)
 - Consider
 - ▶ Long-term benefits to state consumers (10-40 years?)
 - ▶ Long-term societal benefits

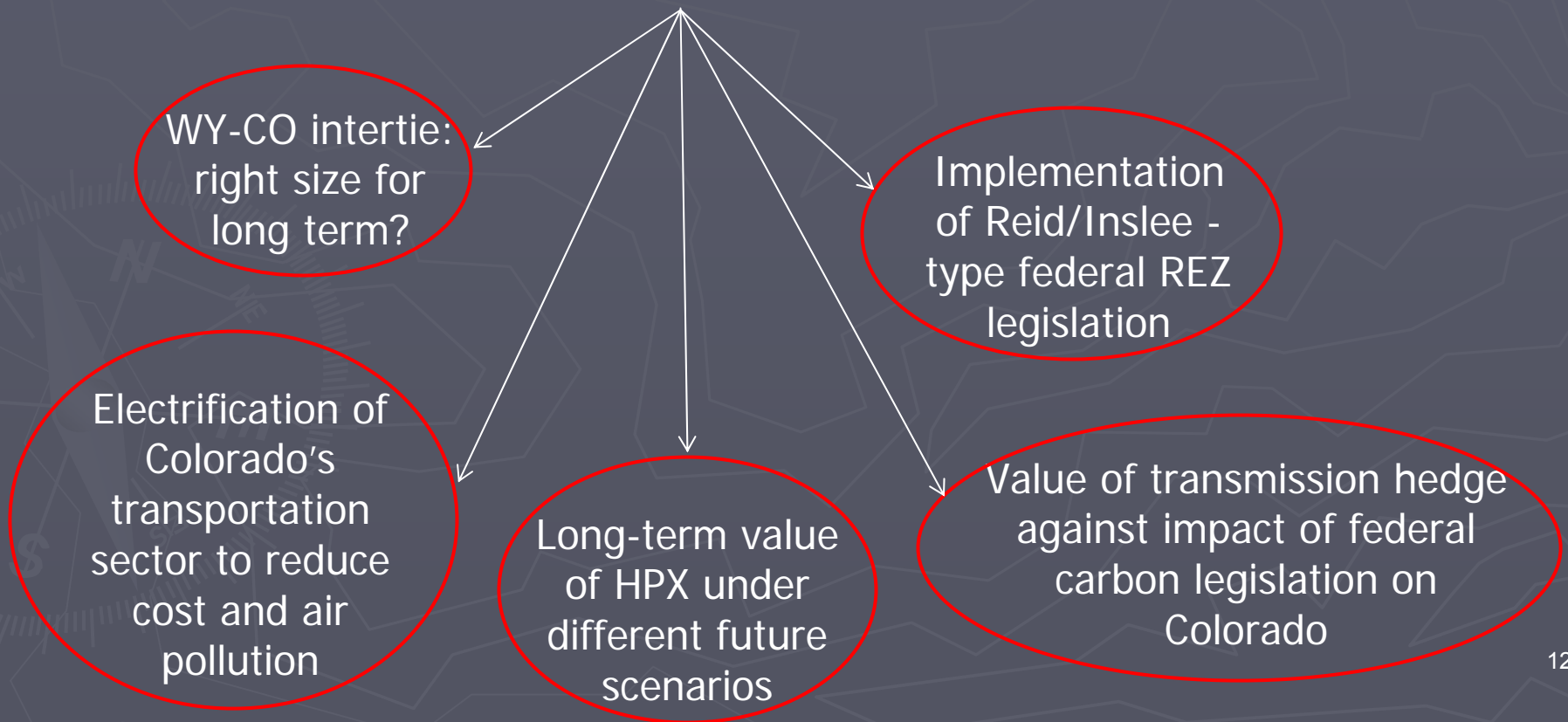
Utilities Assumed Relatively Modest Base-Case Carbon Emission Price Projections

Levelized Carbon Emission Price Projections (2010-2030)



Cajoler

- ▶ Use CEDA's assessment to cajole others (utilities, PUC, Congressional delegation, etc.) to consider transmission implications in the long term
- ▶ Foreseeable targets?



Supplement WREZ Slides



Renewable Generation Challenges

▶ Transmission

- Generation is remote from load
- Transmission is a “lumpy” investment with large economies of scale
- Danger in balkanization
- Contribution of the Western Renewable Energy Zone (WREZ) project

▶ Integration

Origin of Proposal

- ▶ 6/06 WGA Clean and Diversified Energy Initiative recommendations
- ▶ 9/07 WGA/NWCC/GEA renewables and transmission summit in Ft. Collins recommendation to identify WREZs that incorporate all renewable fuels
- ▶ 11/07 presentations to and sign-off from WGA Staff Council, WIEB Board, CREPC
- ▶ 12/07 Governors' proposal to Secretary Bodman for a WREZ project
- ▶ 5/28-29/08 WREZ kick-off meeting in Salt Lake City

Overview of WREZ Phases

1. Identification of WREZs
 - Technical analysis
 - Stakeholder “ground truthing”
2. Conceptual transmission from WREZs
3. Coordinated procurement for renewables (beyond current budget period)
4. Institutional options to facilitate interstate transmission for renewables (beyond current budget period)

WREZ schedule

- ▶ May 28 kick-off meeting
 - Convened Steering Committee
 - ▶ Includes all Western PUCs
 - ▶ Formation of Technical Committee (met on 5/29)
 - Formation of work groups
- ▶ Dec / Jan ?
 - Conclusion of Phase 1 (identification of zones)
 - Launch of Phase 2 (conceptual transmission)
 - ▶ LSE / PUC model
 - ▶ Integration of WREZ work into sub-regional and WECC transmission planning

Value Added By the Western Renewable Energy Zone (WREZ) Project

**Enable LSEs, transmission providers,
generation developers, state regulators to
make more informed decisions about:**

- Costs of renewable power;
- Optimum transmission needed to move renewable power to consumers;
- Potential partners in developing transmission to access renewable areas; and
- Where renewable energy developers can site their facilities to ensure access to the transmission system and minimize environmental impacts.

Information is essential to develop transmission because:

- ▶ Outside of the CA ISO and AB, there is no mechanism in the Western Interconnection to force unwilling parties to pay for new transmission.
- ▶ LSE fuel choices will ultimately determine what transmission gets built.
- ▶ LSE resource planners (and regulators) often operate in stovepipes and may miss opportunities for inter-company collaboration.
- ▶ Inter-company collaboration is important to build major transmission. One LSE may not need all the capacity created by transmission to a REZ.

A WREZ effort also...

- ▶ Promotes a regional view of renewables development blunting potential balkanization of the renewables markets. This is particularly important for development of renewables that are distant from load centers.
- ▶ Paves way for interstate collaboration on:
 - Permitting of multi-state transmission;
 - Allocating and recovering cost of new transmission.
- ▶ Could provide an informational foundation for new approaches to interconnection and transmission service queuing problems.