Planning for a 100% Renewable New Mexico

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5 Recommendations:

• Understand the titanic shift
• Share the good news
• Birth control for ducks
• Make friends
• Go long
Understand the titanic shift

Baseload ➔ Flexible Resources

• Large, remote units to small, modular, local
• System build on baseload is old paradigm
• Supply was steady, demand variable
• Supply is becoming variable, demand can be shaped (communications and control technology)
Understand the titanic shift

Mechanical ➔ Electrical

**Fossil** = mechanical, thermal (water boiling) systems, relatively slow to respond

**Solar & Wind** = electronic, super fast responding, highly programmable, can provide comparable reliability services (voltage, frequency, balancing/ramping).

Fundamental system change is underway.
Understand the titanic shift

Hourly → 5-Minute Scheduling

• FERC Order 764 required transmission owners to offer 15-minute scheduling
• EIM and CAISO use 5-minute scheduling
• Significant upgrades required in software, hardware and control of generators
• Huge cultural and professional shift

EIM requires learning and modernization that will enable RE future
Understand the titanic shift

- **Shift from fossil to clean resources** is unstoppable
- National & local studies show we can **reliably** make this transition
- Issues are complicated, but delay is not option

So, what’s an advocate to do?
Share the good news

Game changing situation -
We have never been here before

New solar and wind costs:
• can be below imbedded utility costs and new natural gas costs,
• do not carry price volatility, and
• create price stability.
Share the good news

Clean energy has best economics!

- Make sure utilities are testing market through frequent, monitored, competitive bidding processes
- Question cost assumptions in all proceeding – they are changing rapidly
- Repeat economic message everywhere you go
Birth Control for Ducks

- Head off utility arguments for not adding more RE
- Electric system is constantly evolving, requiring system modifications for new resources
- Utilities should be planning now for ever-increasing amounts of flexible generation
Birth Control for Ducks

Many options for inoculation

• Domestic hot water heaters are “batteries”
• Ice thermal storage
• Targeted EV charging
• Energy efficiency and demand response
• Joining EIM to buy and sell imbalance energy

See RAP’s “Teaching the Duck to Fly”
Make Friends

NM is too electrically isolated to fully develop its world-class wind & solar resources

• MWTG could isolate NM even further
• EIM is step toward regionalization
• Day-2 regional market participation is best support for wind and solar, lowers cost for consumers + increases reliability
• Regional markets allow for resource sharing, decreasing need for new natural gas
Go Long

• Pay attention to enabling investment (e.g., natural gas or distribution infrastructure)

• Push for evaluation of regional coordination

• Understand NM’s export opportunities

• Coal closure = transmission for RE
Final thoughts

- Public supports RE & more jobs in RE than fossil
- A more interconnected grid is inevitable, the sooner the change, the greater the consumers saving
- A RE system will be more stable and less costly than fossil system
- Corporations with RE and carbon goals are new, powerful allies
- Roadblocks to change are largely people and institutions, not technology
Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.

– Margaret Mead