



12745 N. Thornton Road  
Lodi, CA 95242

phone (209) 333-6370  
fax (209) 333-6374  
web [www.ncpa.com](http://www.ncpa.com)

## Notice – Call of Special PPC Meeting

---

**Date:** April 29, 2021  
**To:** NCPA Lodi Energy Center Project Participant Committee  
**From:** Basil Wong, Chairman  
**Subject:** **May 3, 2021 LEC PPC Special Meeting Notice & Agenda**

---

PLEASE TAKE NOTICE that pursuant to Government Code section 54956, a special meeting of the Northern California Power Agency Lodi Energy Center Project Participant Committee is hereby called for **Monday, May 3, 2021 at 10:00 am** to discuss those matters listed in the attached Agenda. The meeting will be held at the Northern California Power Agency, 12745 N. Thornton Road, Lodi, California.

---

Basil Wong, Chairman



12745 N. Thornton Road  
Lodi, CA 95242

phone (209) 333-6370  
fax (209) 333-6374  
web www.ncpa.com

## LEC PPC Agenda

---

**Date:** April 29, 2021  
**Subject:** May 3, 2021 Lodi Energy Center Project Participant Committee Meeting  
**Location:** 12745 N. Thornton Road, Lodi, CA and/or Posted Teleconference Locations  
**Time:** 10:00 am

---

\*\*\*This meeting is being held in accordance with the Brown Act as currently in effect under the State Emergency Services Act, Governor Newsom's Emergency Declaration related to COVID-19, and Governor Newsom's Executive Order N-29-20 issued on March 17, 2020 that allows attendance by LEC PPC Members, staff, and the public to participate and conduct the meeting by teleconference.

.....

**In compliance with the Executive Department, State of California, Executive Order N-29-20, and the Brown Act, you may participate in the meeting via teleconference by:**

<https://zoom.us/j/92751329781>

**Dial:** 1-669-900-6833

**Meeting ID:** 927 5132 9781

*Persons requiring accommodations in accordance with the Americans with Disabilities Act in order to attend or participate in this meeting are requested to contact the NCPA Secretary at 916.781.3636 in advance of the meeting to arrange for such accommodations.*

*The Lodi Energy Center Project Participant Committee may take action on any of the items listed on this Agenda regardless of whether the matter appears on the Consent Calendar or is described as an action item, a report, or an information item. If this Agenda is supplemented by staff reports, they are available to the public upon request. Pursuant to California Government Code Section 54957.5, the following is the location at which the public can view Agendas and other public writings: NCPA, 651 Commerce Drive, Roseville, CA or [www.ncpa.com](http://www.ncpa.com)*

**1. Review Safety Procedures**

**2. Call Meeting to Order and Roll Call**

**PUBLIC FORUM**

Any member of the public who desires to address the Lodi Energy Center Project Participant Committee on any item considered by the Lodi Energy Center Project Participant Committee at this meeting, before or during the Committee's consideration of that item, shall so advise the Chair and shall thereupon be given an opportunity to do so. Any member of the public who desires to address the Lodi Energy Center Project Participant Committee on any item within the jurisdiction of the Lodi Energy Center Project Participant Committee and not listed on the Agenda may do so at this time.

**INFORMATIONAL/ DISCUSSION ITEMS**

- 3. Hydrogen Underground Storage Concept** – Staff will provide additional information regarding the proposed Hydrogen Underground Storage Concept.

**CLOSED SESSION ITEMS**

- 4. CONFERENCE WITH REAL PROPERTY NEGOTIATORS** – Authority to conduct real property negotiations pursuant to Government Code Section 54956.8.

Property: APN # 055-070-07, APN # 055-070-08, APN # 055-080-02

Agency Negotiator: Joel Ledesma and Michael DeBortoli

Negotiating Parties: Patrick Ross, Sierra Stream, LLC

Under Negotiation: The instruction to negotiators will concern price and terms of payment.

**ADJOURNMENT**

Next Regular Meeting: Monday, May 10, 2021 at 10:00 am.

*Persons requiring accommodations in accordance with the Americans with Disabilities Act in order to attend or participate in this meeting are requested to contact the NCPA Secretary at 916.781.3636 in advance of the meeting to arrange for such accommodations.*



# Underground Reservoir Opportunity Near LEC

Open Session

Michael DeBortoli  
Plant Manager  
May 3<sup>rd</sup>, 2021

## Hydrogen's Potential Role in our Power Supply and Net-Zero Targets

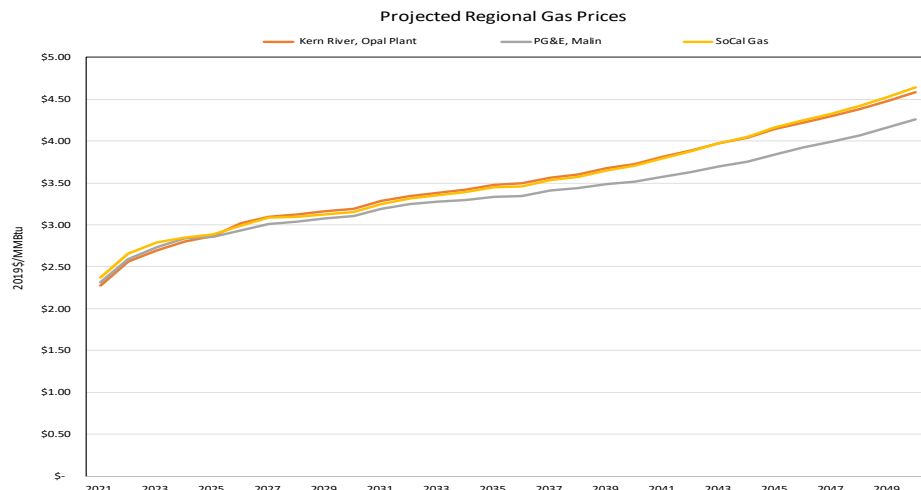
- Nationally and at the State level, grid reliability/resiliency, accelerating climate goals, and Hydrogen as a fuel for the transportation and energy sector are being heavily studied.
- Hydrogen's accelerated role will likely be determined by the above. **While Hydrogen is a long-term prospect, we need to take advantage on near-term opportunities!**
- NCPA LEC's actions are proactive, forward looking to ensure a cost-effective approach for our participants to position LEC positively for changes by grid regulators.

## **Concerns/Questions from last discussion**

- BV energy prices seems to high.
- REC “sharing” is not available.
- When could hydrogen become cheaper than natural gas?

## BV energy prices seems to high.

- Project electric prices driven by underlying gas price projections from B&V's fundamental analysis.
  - Projected gas production declines in the Rockies and WCSB will drive natural gas prices higher.
  - Lower expectations for LNG exports from BC reduces WCSB production projections.
  - Rockies production continues to decline with increase competition from WCSB and Permian to serve Western US Markets.
- Electricity and REC pricing adjusted from real 2019 USD to current USD assuming **1.9% inflation** (i.e. historical consumer price index)
- Black & Veatch economic model **assumes average electricity pricing** in LCOH model and average REC pricing in LCOE model
- **Dynamic time of day electricity price** modeling would be needed as part of **next phase of development**
- Feasibility analysis and associated **assumptions were meant to discern relative drivers**



## REC “sharing” is not available.

We need to be talking about environmental attributes and REC’s being a component.

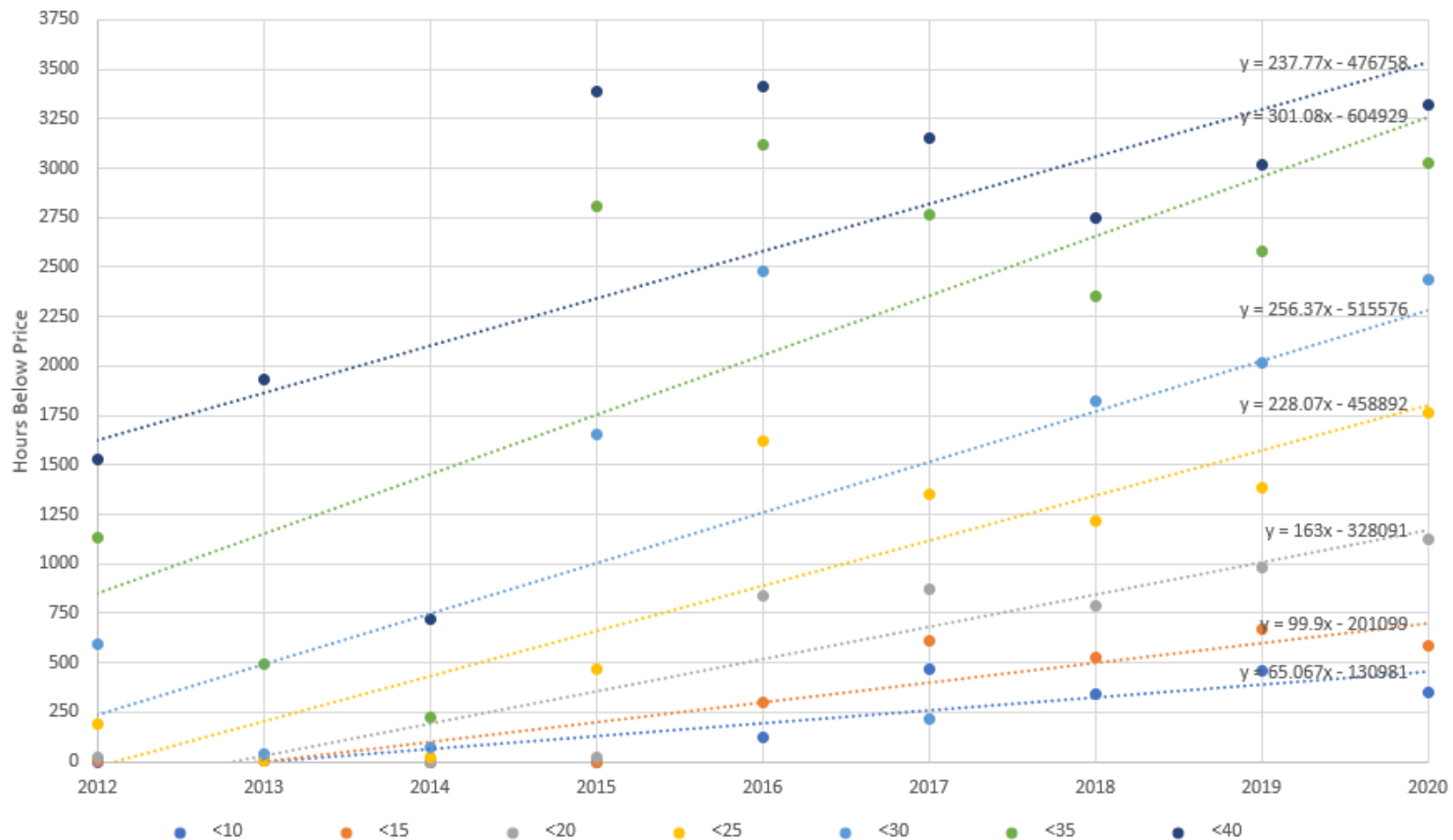
- Hydrogen co-firing will result in lower emissions therefore an decrease in GHG credits.
- REC “sharing” is a concept to be explored.
  - A new term for renewable PPA’s conditioned on curtailments.
- Look for opportunities to include “green” hydrogen co-firing as a “renewable resource” and disconnect from the renewable source attached to the Electrolyzer (load).
- NCPA is monitoring political climate regarding expediting renewable and climate goals.

## When could hydrogen become cheaper than natural gas?

- There are many studies performed in industry all showing hydrogen compared with natural gas firing with cost parity around 2030.
- NCPA performed analysis using some basic assumptions.
  - Cost based on VOM
  - VOM costs of hydrogen co-firing is driving CF.
  - No incentives (REC's, O2 sales, or Capital grants) are considered.
  - Natural Gas Commodity **3%** escalation
  - Transportation **15%** escalation
  - GHG **7%** escalation

# Is energy getting cheaper?

Hours Per Year below Certain Energy Price



- Only looked at hours between 7am-6pm
- Max solar hours 4,435 hours per year, sunrise - sunset

## Conversion

- To convert energy price to a gas equivalent

$$\frac{\$}{\text{MMBTU (H}_2\text{)}} = \left( \frac{\$}{\text{MWH}} + \frac{2.25 \$}{\text{MWH}} \right) * \frac{19 \text{ MWH}}{44.4 \text{ MMBTU}}$$

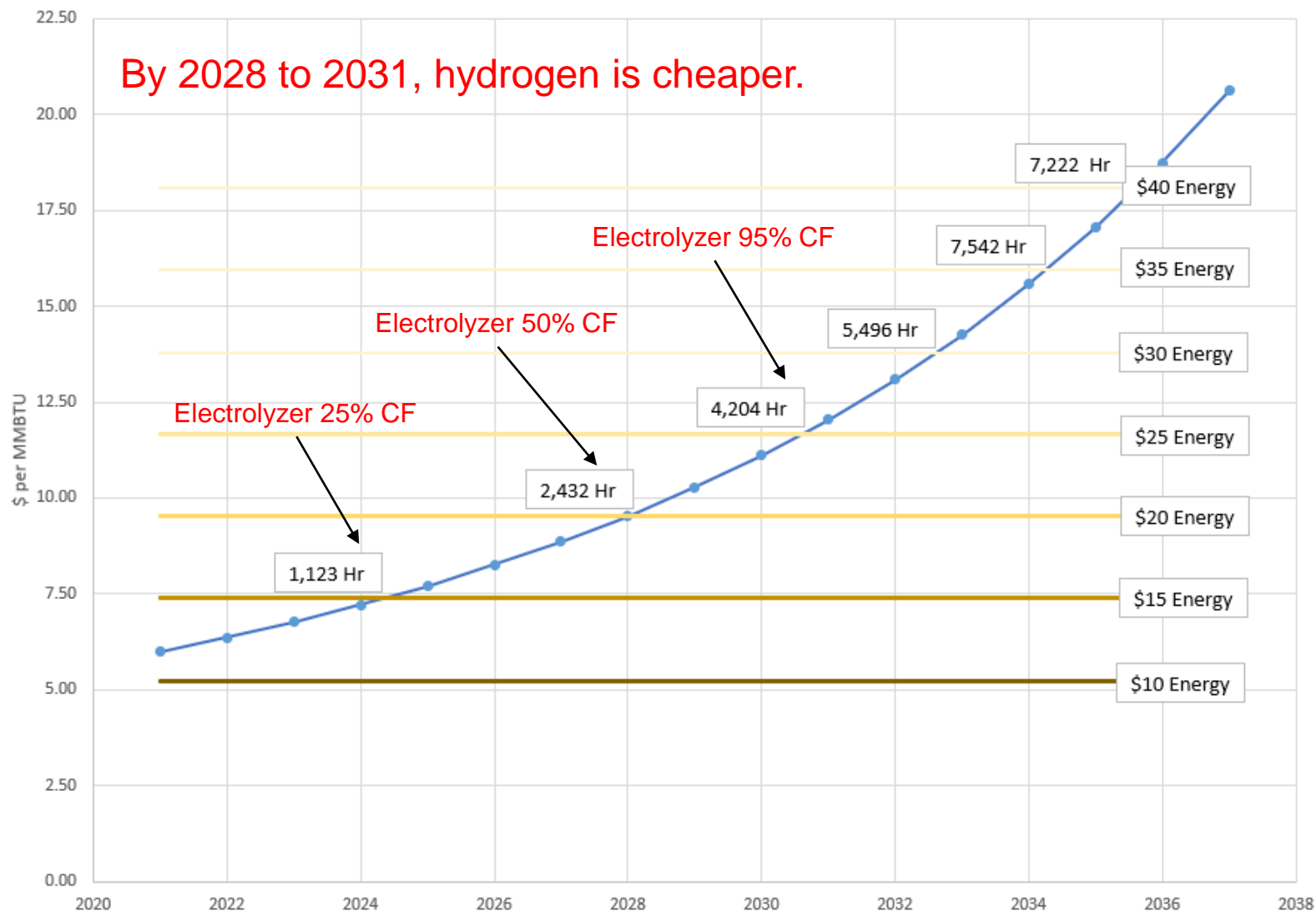
Gas Price in energy units

Energy price used to produce hydrogen

Variable Maintenance Cost

“Heat rate” of the unit. Efficiency

### Gas Price vs H<sub>2</sub>



## Storage Opportunity

- With 50-95% CF on Electrolyzer, significant storage is needed.
- Storage options need to be evaluated.
  - Above ground, included in BV Feasibility Study.
  - **Underground, opportunity site is being proposed for study.**
  - Current Pipeline system- PG&E is currently studying this.