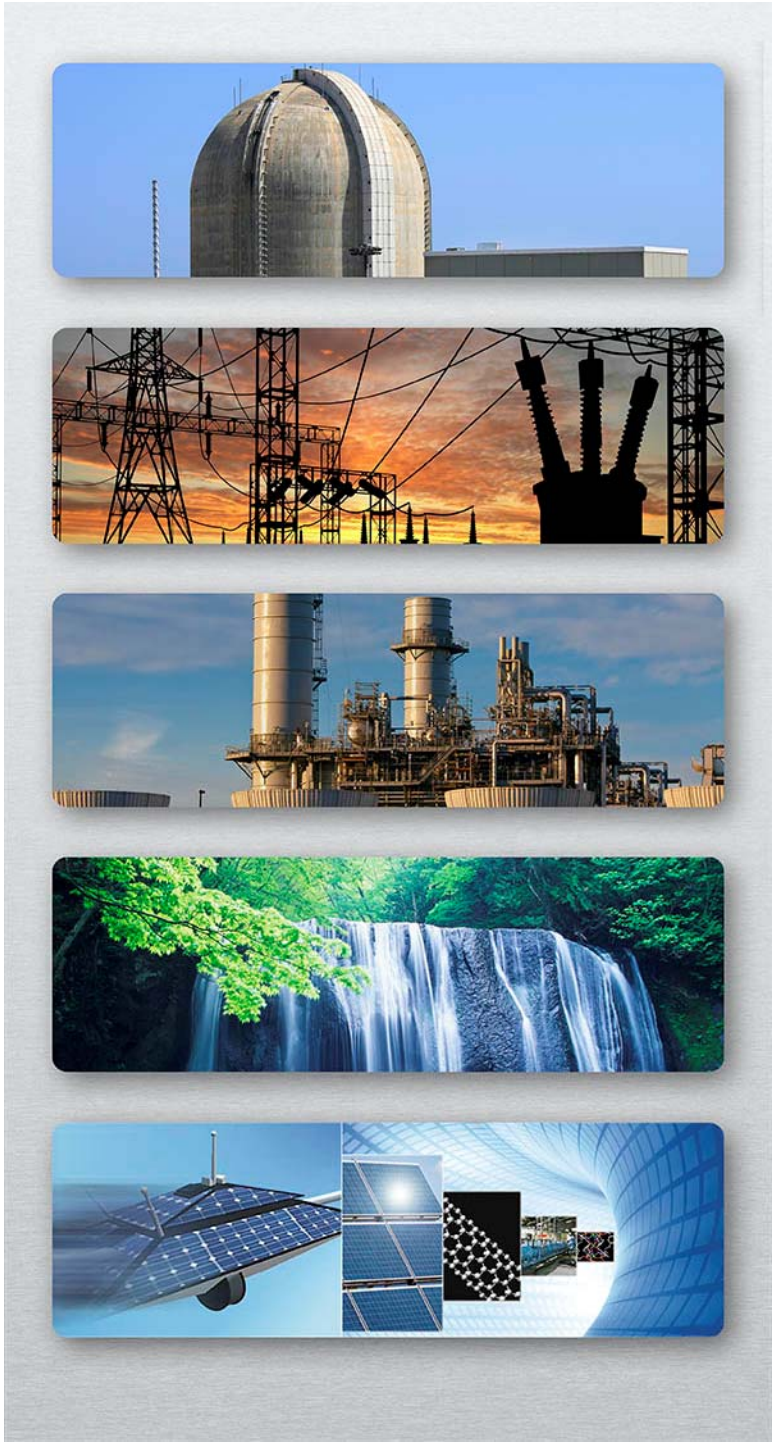

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A Bridge to the Future – The Key Role of Offsets in Achieving Climate Mitigation

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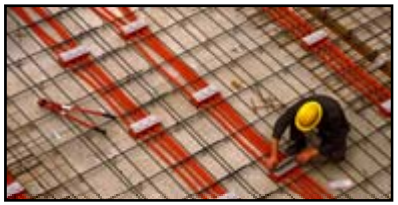
Together…Shaping the Future of Electricity



- U.S. non-profit "501(c)(3)" scientific research consortium founded 1973 to perform objective electricity research for the public benefit.
- EPRI has 450+ participants in more than 40 countries around the world. In the U.S., EPRI participants generate more than 90% of electricity delivered.
- Principal locations — Palo Alto, CA, Charlotte, NC and Knoxville, TN

What are GHG Offsets?

- "Credits" for GHG emission *reductions*, *avoidance* or *sequestration* that occur in sectors or geographic regions ***outside*** of an GHG emissions cap.
- Offset Benefits
  - Reduce compliance cost
  - Engage "non-covered" entities in GHG mitigation
  - Create economic incentive to develop new GHG reduction technologies and approaches
  - Mechanism to "link" global carbon markets

Offsets provide a "bridge" to a low-carbon future and time for technology development, demonstration and commercial deployment.

Offset Supply is a Critical Issue in Evolving U.S. and CA Climate Policy

- Many recent analyses of proposed federal climate legislation concluded that large-scale offset supplies are critical for containing future carbon costs.
- CA's CO_2 cap-and-trade program allows offsets to comprise up to 8% of compliance obligations during each compliance period, for a total of ~218 $MtCO_2e$ (2013-2020).
- The WCI would permit 49% of emissions reductions to be achieved with offsets

Key Role of GHG Emissions Offsets for Containing Future CO_2 Emissions Costs

CBO Estimates of the Effects of HR 2454 "With" and "Without" Offsets in 2030

	With Offsets	Without Offsets
Net economic cost ($2007)	$101B	$248 B
CO_2 allowance price ($/t$CO_2$e)	$40	$138

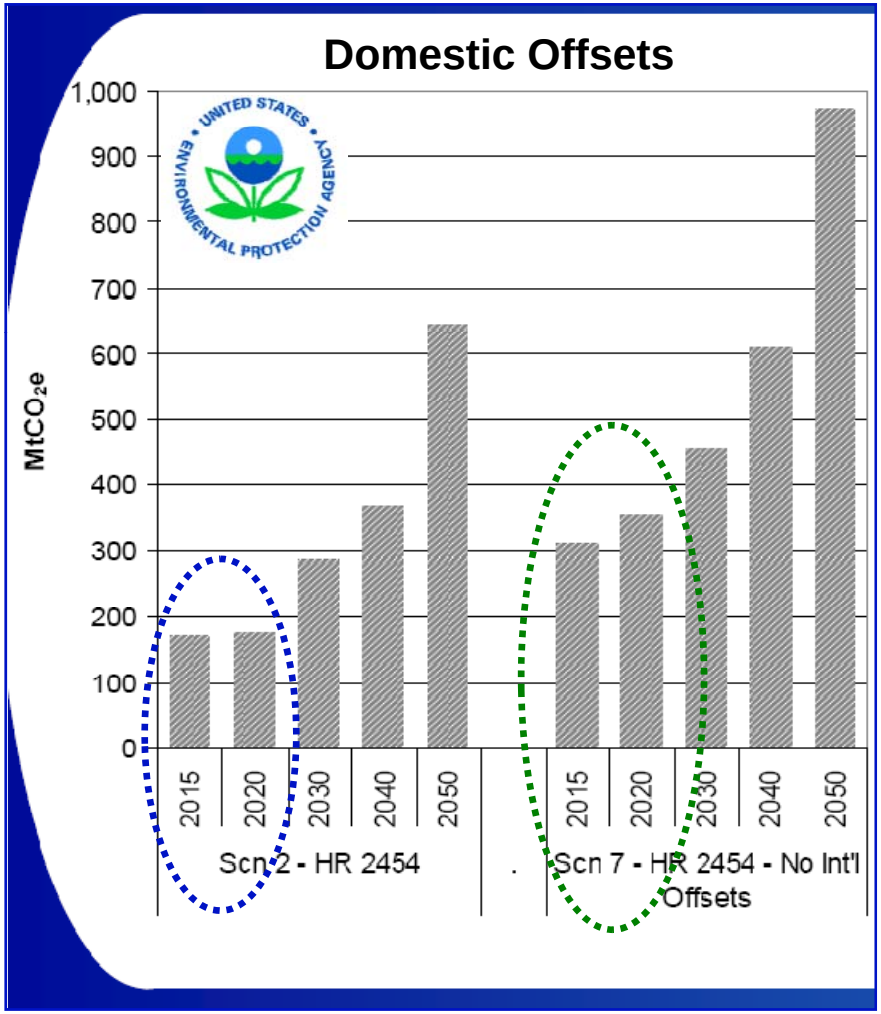
"The cost savings to the economy generated by offsets could be substantial. CBO estimates that between 2012 and 2050 average annual savings from offsets could be about 70 percent under ACESA."
(CBO Analysis of HR 2454, p. 8)

Source: "The Use of Offsets to Reduce Greenhouse Gases," Economic and Budget Issues Brief, Congressional Budget Office, August 3, 2009, Table 1.

Domestic Offsets in HR 2454:
Will Enough Come in the Near Term?

- Proposed federal legislation would have allowed 1 $GtCO_2e$ of domestic offsets per year, but…
- EPA estimated only ~170$MtCO_2e$ per year through 2020 @ \$15/tCO_2e
- Largest sources are forest management & afforestation

Limited sectoral eligibility and difficulty implementing agricultural and forestry offsets, means domestic offsets are likely to be limited in the near term.



Source: EPA Analysis of H.R. 2454 6/23/09, P. 23.

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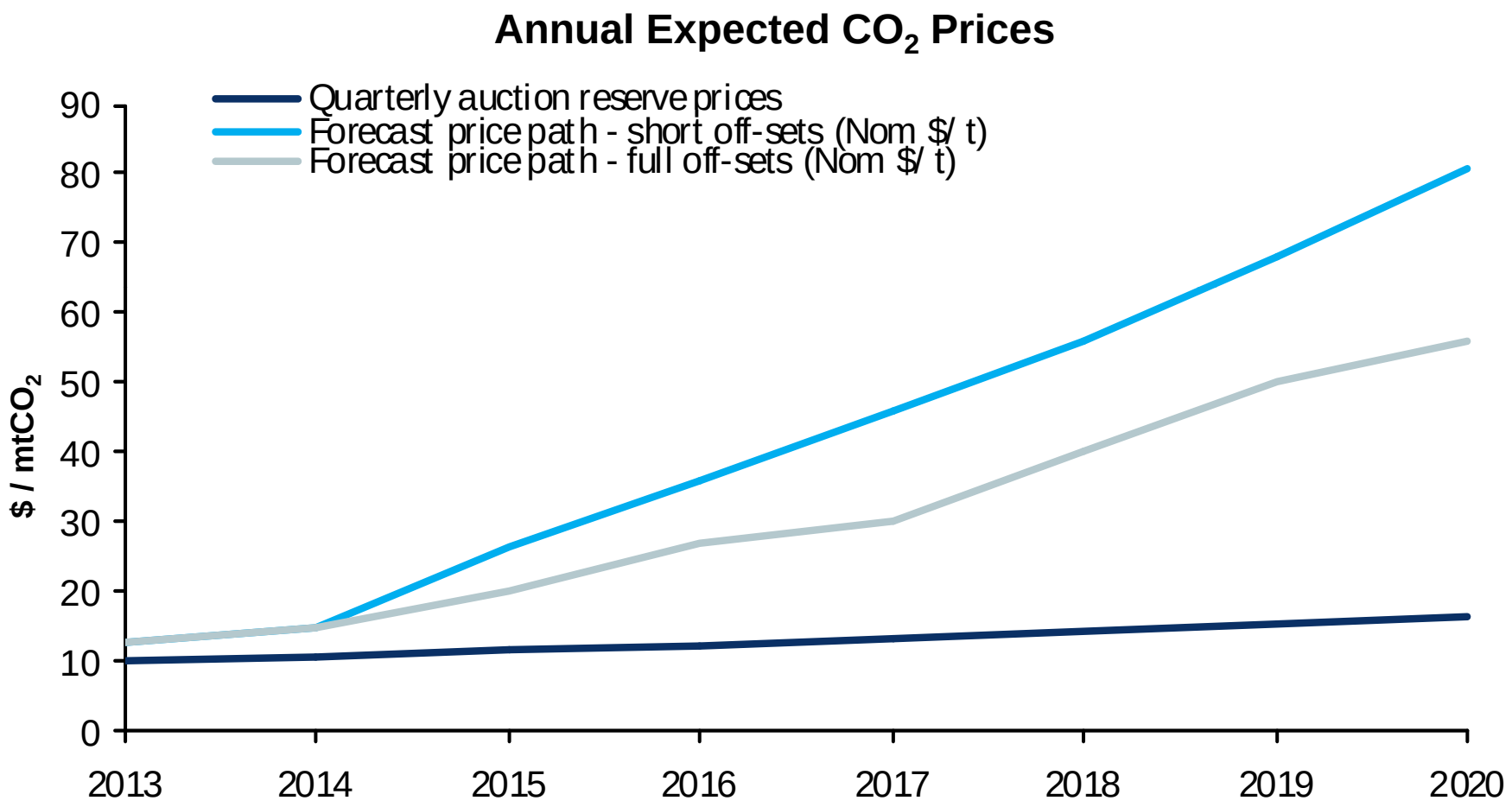
Will CA Have Enough Offsets?

	CP1 (2012-2014)	CP2 (2015-2017)	CP3 (2018-2020)
Emissions-cap forecast	1 Mt	59 Mt	185 Mt
Offset allowance	26.5 Mt	98 Mt	98 Mt
Offset supply forecast	14 Mt	46 Mt	79 Mt

Source: ARB, CAR, Barclays Capital, October 2011

- CP1: Offset supply expected is only ~50% of allowed supply, but should be adequate given market balance.
- CP2: Offset supply expected is only ~50% of allowed supply, and is not expected to cover market "short" position
- CP3: Offset supply expected is ~80% of allowed supply, and is expected to be quite short of meeting demand.

Lower Offset Supplies Lead to Higher Expected CO_2 Emissions Prices in CA 2013-2020



Source: ARB, CAR, Barclays Capital, October 2011

International Offsets – Large potential, but Challenging to Implement

- International "project-based" offsets (e.g., CDM)
  - It took many years to develop CDM (1997-2005)
  - CDM has issued fewer offsets than expected
  - "Ton-by-ton" approach is inefficient and cannot scale
  - U.S. buyers will face international competition
- REDD
  - Many REDD projects are located in "risky" countries that lack expertise, institutional capacity and governance
  - National commitments to reduce deforestation (e.g., Brazil) may significantly reduce potential offsets
  - Lack of a "comprehensive" policy for forest-based carbon sequestration may lead to significant near-term leakage

Reasons for Optimism – Forward Progress on Scaling Up Offsets

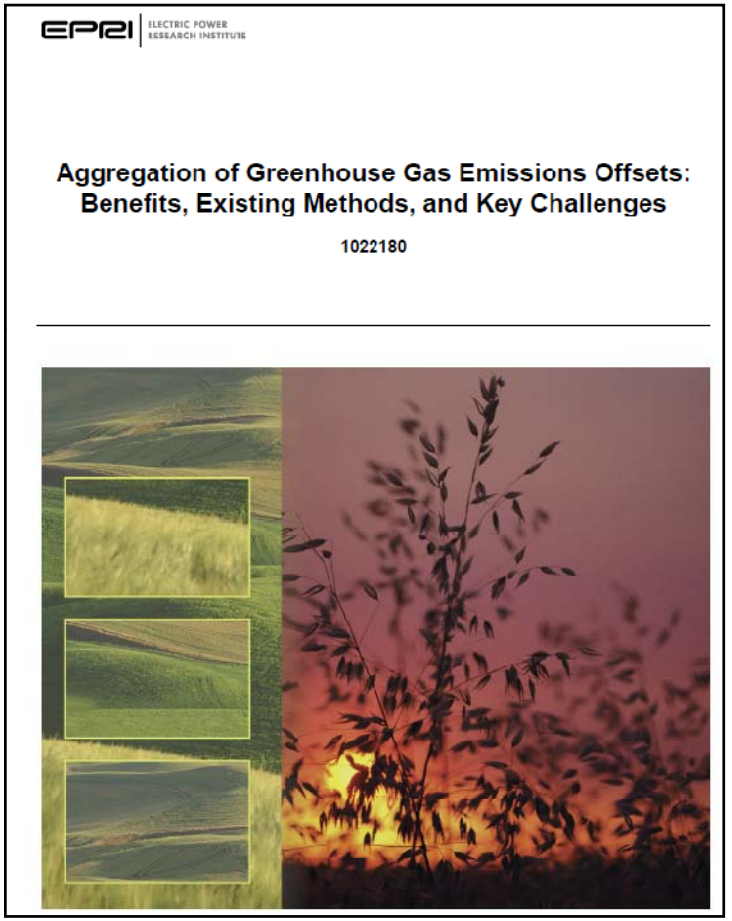
- CDM reform is happening now, and is focused on further developing "Programmatic CDM," standardized baselines and simplified methodologies.
- REDD is moving forward in the international negotiations and may be the first "sectoral" program; CA's new CO_2 cap-and-trade system could allow REDD offsets to be used for compliance starting as early as 2015.
- Growing recognition of the need to facilitate "aggregation" of agriculture and forestry offsets to increase supplies.
- Growing U.S. domestic "voluntary" market may help soften the transition to a compliance market
  - "Early action" offset credits
  - Existing and evolving protocols and methodologies

Key Insights

- The option to use offsets for compliance *combined* with robust offset supplies are critical for achieving CO_2 cost containment.
- Existing options to scale up offset supplies are *not* sufficient. New designs & approaches are needed.
- International offset supplies could be large, particularly "sector-based" offset supplies and REDD, but these policies are complex, may take years to negotiate and implement, and may not yield as many offsets as some expect.
- There is a "zero-sum game" between mitigation actions adopted by developing countries (e.g. Brazil) and the potential to supply low-cost offsets from these countries.
- The development of the CA offsets market will be critical for demonstrating if domestic offsets can provide large-scale low-cost emission reductions.

Key EPRI Offsets Documents

- **Aggregation of Greenhouse Gas Emissions Offsets: Benefits, Existing Methods, and Key Challenges**. EPRI document #1022180 (2011).
- Emissions Offsets: **The Key Role of Greenhouse Gas Emissions Offsets in a U.S. Greenhouse Gas Cap-and-Trade Program.** EPRI document #1019910 (2010).
- Key Issues in **Designing Mechanisms to Reduce Greenhouse Gas Emissions from Deforestation and Degradation (REDD).** EPRI document #1017998 (2009).
- The EPRI Greenhouse Gas Emissions Offset Policy Dialogue: **Description of Key Issues in the Design of GHG Emissions Offset Programs.** EPRI document #1015633 (2008)
- "**A Comprehensive Overview of Project-Based Mechanisms to Offset Greenhouse Gas Emissions."** EPRI document #1014085 (2007).



http://globalclimate.epri.com/results_and_publications__ghg_offset_policy.html

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Thank You

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