



Greenhouse Gas Offsets in Evolving U.S. Climate Policy

Adam Diamant
Senior Project Manager
EPRI Global Climate Research Program

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Today's Discussion

- GHG Emissions Reduction Challenge
- Benefits and Risks of Offsets
- Offsets and Waxman-Markey (HR 2454)



Implications of Near-term CO₂ Reductions

- Proposed U.S. legislation
 - Economy-wide CO₂ cap-and-trade program
 - Requires significant near-term CO₂ reductions
- Near-term (2010-2015)
 - No large-scale, low-cost CO₂ abatement options available



Implications of Near-term CO₂ Reductions



- CO₂ prices likely will rise to force natural gas to displace coal
- CO₂ allowance prices will be “high” ($\geq \$30/\text{tCO}_2$) in early years of a new CO₂ cap-and-trade program ***unless...***
 - “Safety valve” or other price-control mechanism(s)
 - Massive GHG reductions by other regulated sectors (unlikely), or....

– Abundant offsets are available

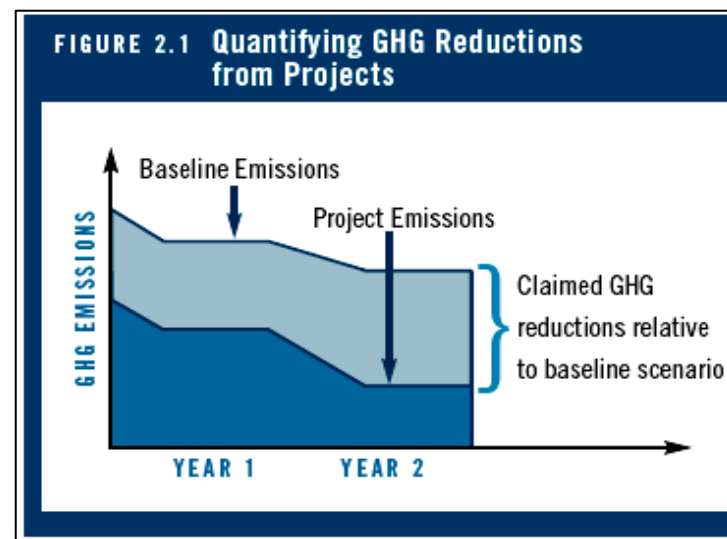
What are GHG Offsets?



- “Credits” for GHG emissions reductions that occur in sectors or geographic regions ***outside*** of an emissions cap
- GHG emissions reductions must be
 - *Real*
 - *Additional*
 - *Permanent*
 - *Measurable*
 - *Verifiable*

What are GHG Offsets?

- Offsets – Difference between “business-as-usual” and residual CO₂ emission
- Existing and evolving offsets programs include . . .
 - U.N. Clean Development Mechanism (CDM)
 - U.N. Joint Implementation (JI)
 - Climate Action Reserve (CAR)
 - Chicago Climate Exchange (CCX)



Source: *The Greenhouse Gas Protocol: Guidelines for Quantifying GHG Reductions from Grid-Connected Electricity Projects*, World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), 2007.

Example Offset Project Types

- **Methane (CH₄) Destruction**
 - Animal waste digesters
 - Landfill gas
 - Coal-mine methane
- **Soil Carbon and Agriculture**
 - Conservation tillage practices
 - Reduced nitrogen fertilizer
- **Forests**
 - Afforestation
 - Reforestation
 - Reduced emissions from deforestation and degradation (REDD)

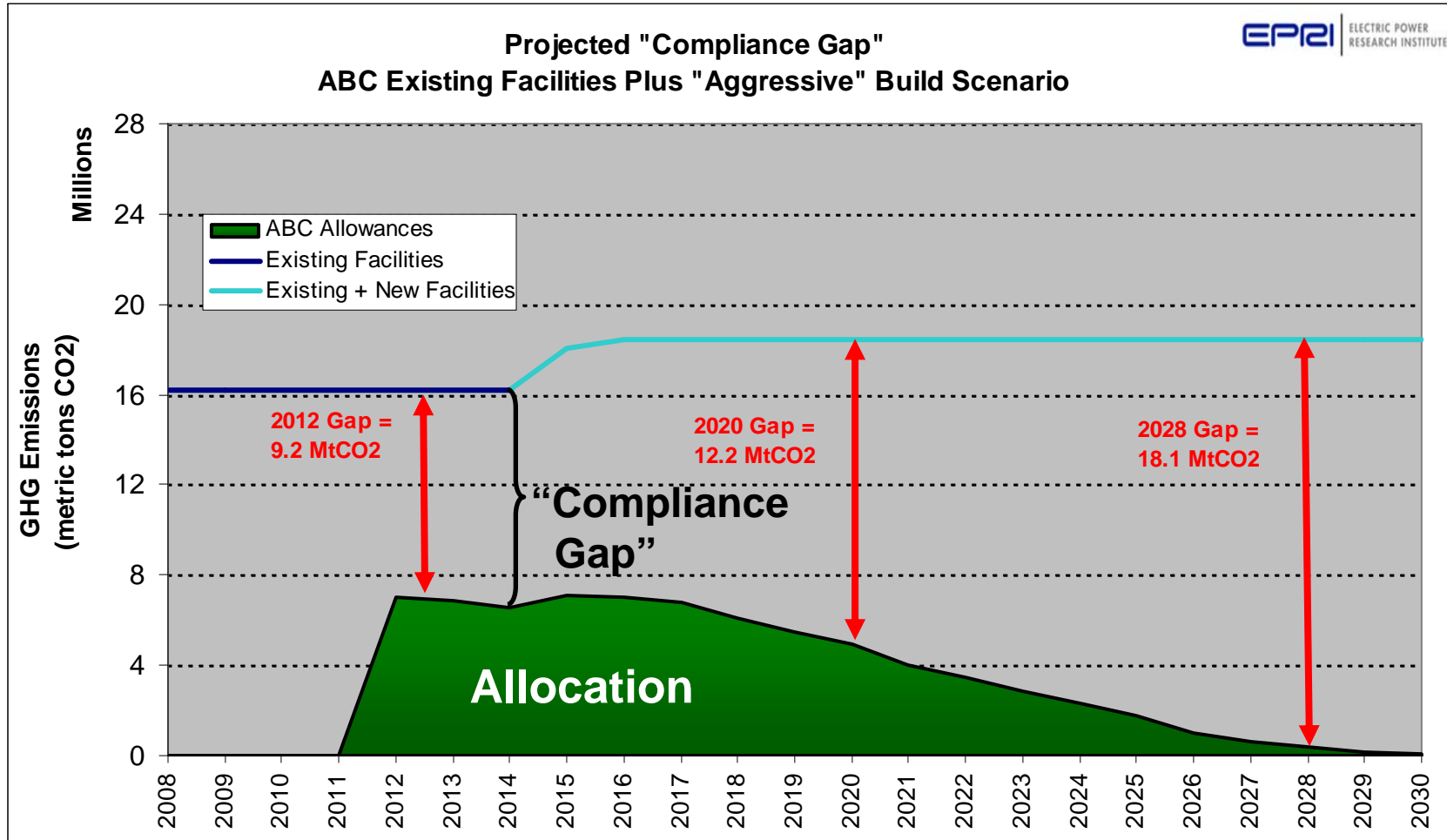


Benefits of GHG Emissions Offsets

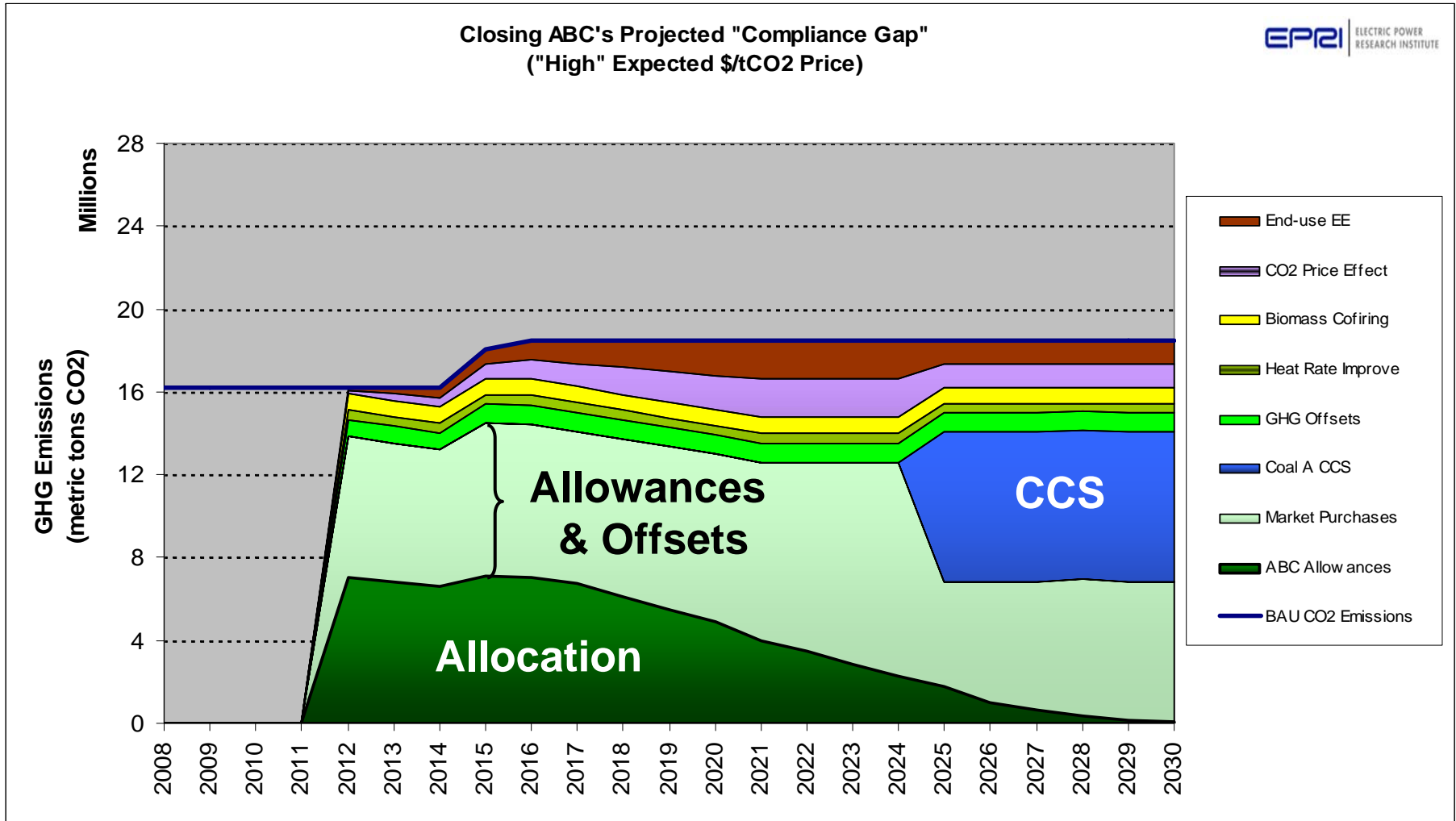
- Reduce compliance cost
- Reduce GHG emissions in uncovered sectors/regions
- Engage entities not directly covered by emissions caps
- Create economic incentive to develop new GHG emission reduction technologies and approaches
- Mechanism to “link” global carbon markets

GHG emissions offsets provides a “bridge” to a low-carbon future and time for technology development, demonstration and commercial deployment.

How Can an Electric Company Close Its Potential CO₂ Compliance Gap?



Buying Offsets & Allowances are Key Components of Future Corporate CO₂ Compliance



Most Companies Will Choose to “Buy” Offsets rather than “Build” Them

Build

(i.e., develop “in house”)

- May acquire “low-hanging fruit,” **but...**
- Requires dedicated staff, resources and specialized expertise
- Significant project and other related risks
- Non-core business for electric companies

Buy

(i.e., purchase in the market)

- Similar to buying SO₂, NO_x, and fuels
- Flexible approach
- Diversify and reduce corporate risk
- Purchase either “primary” or “secondary” credits
- Offset suppliers include:
 - “Project developers” (e.g., CAMCO, MGM...)
 - Carbon funds (e.g., Natsource)
 - Financial Institutions and brokers (e.g., JP Morgan, Evolution...)

Offsets Face Technical Challenges & Risks

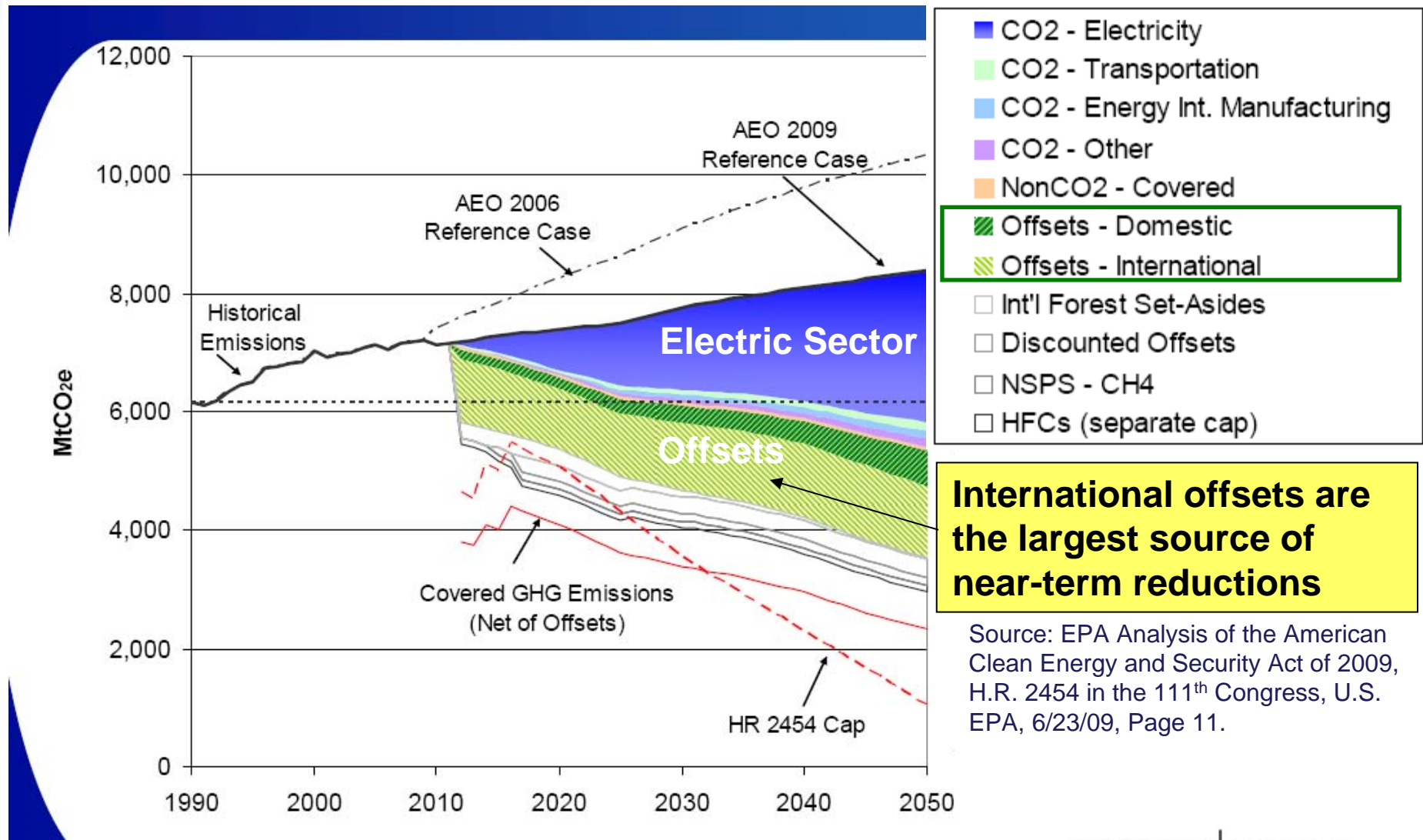


Source: Courtesy of Sam Sandburg,
USDA Forest Service

- **Additionality**
- **Baselines**
- **Permanence**
- **Leakage**
- Measurement, monitoring and verification
- Reduced incentives to invest in low-carbon technologies

Challenges can be addressed, but there remains an inherent tension between perfect “environmental integrity” and need to develop large-scale offsets

HR 2454 – Total US GHG Emissions and Sources of Abatement

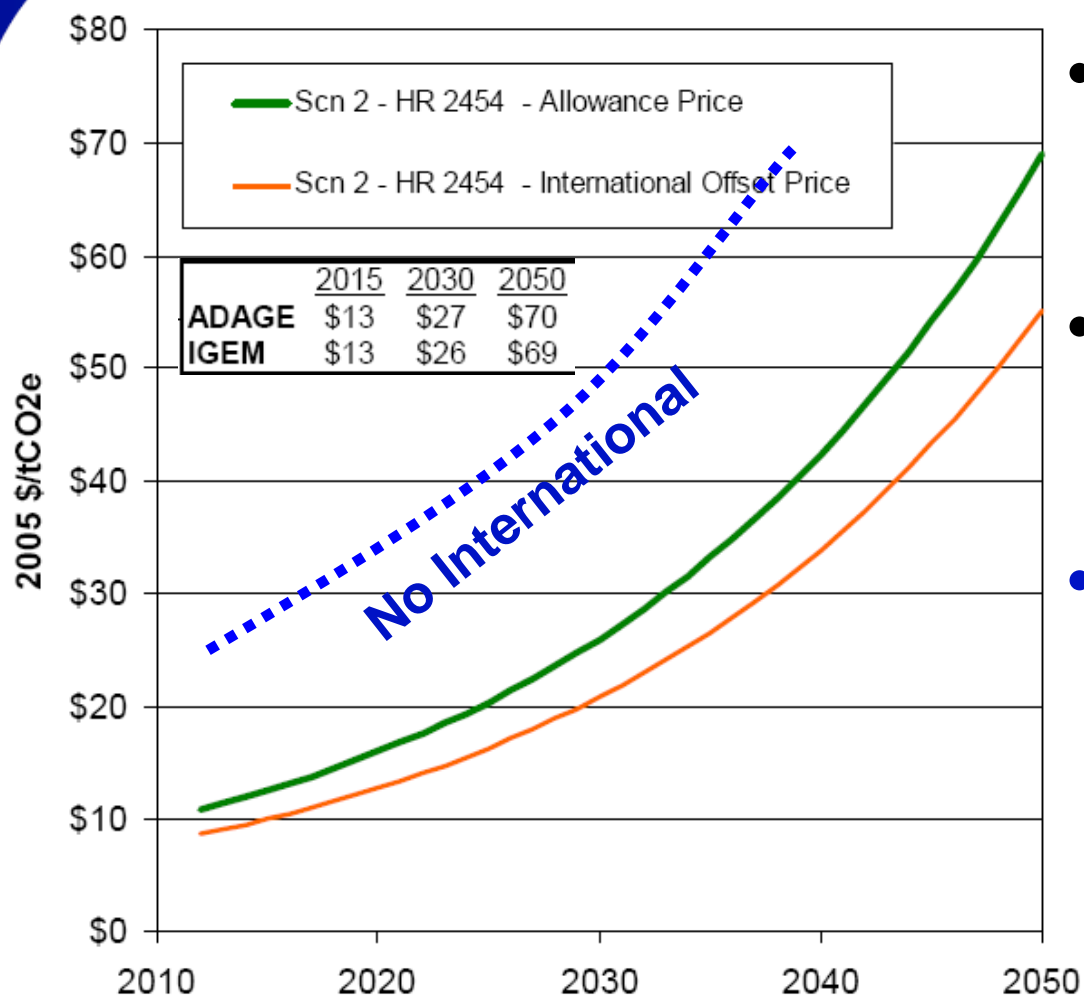


International offsets are the largest source of near-term reductions

Source: EPA Analysis of the American Clean Energy and Security Act of 2009, H.R. 2454 in the 111th Congress, U.S. EPA, 6/23/09, Page 11.



HR 2454 – CO₂ Allowances Prices

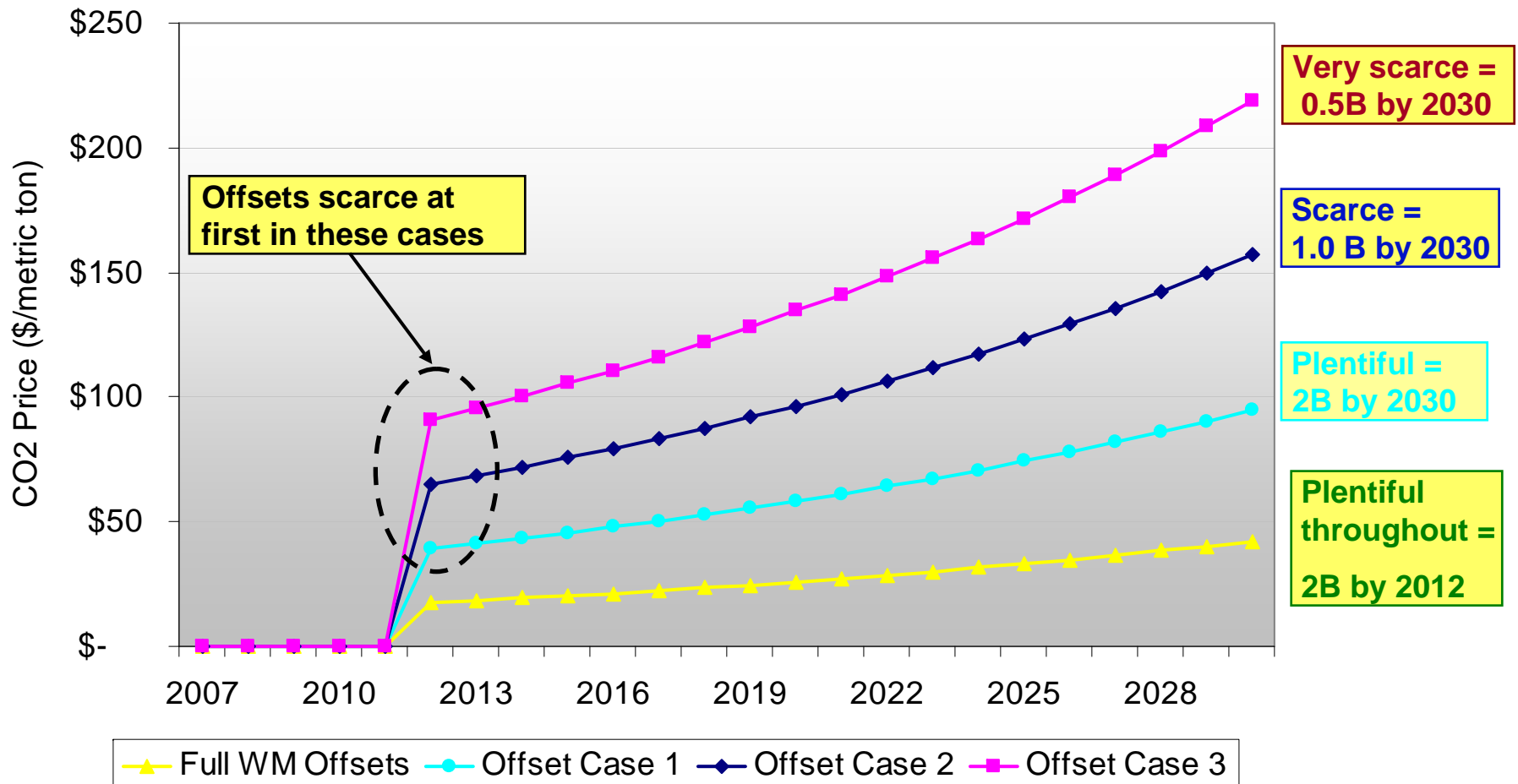


- Domestic & international offset limits are *non-binding* in all years.
- The international offset price sets the domestic CO₂ allowance price.
- If no international offsets, than the CO₂ allowance price would increase 89%!

Source: EPA Analysis of the American Clean Energy and Security Act of 2009, H.R. 2454 in the 111th Congress, U.S. EPA, 6/23/09.

NEMS Results Shows Sensitivity of CO₂ Price to Availability of Offsets

NEMS CO₂ Price Path to Meet Abatement Target

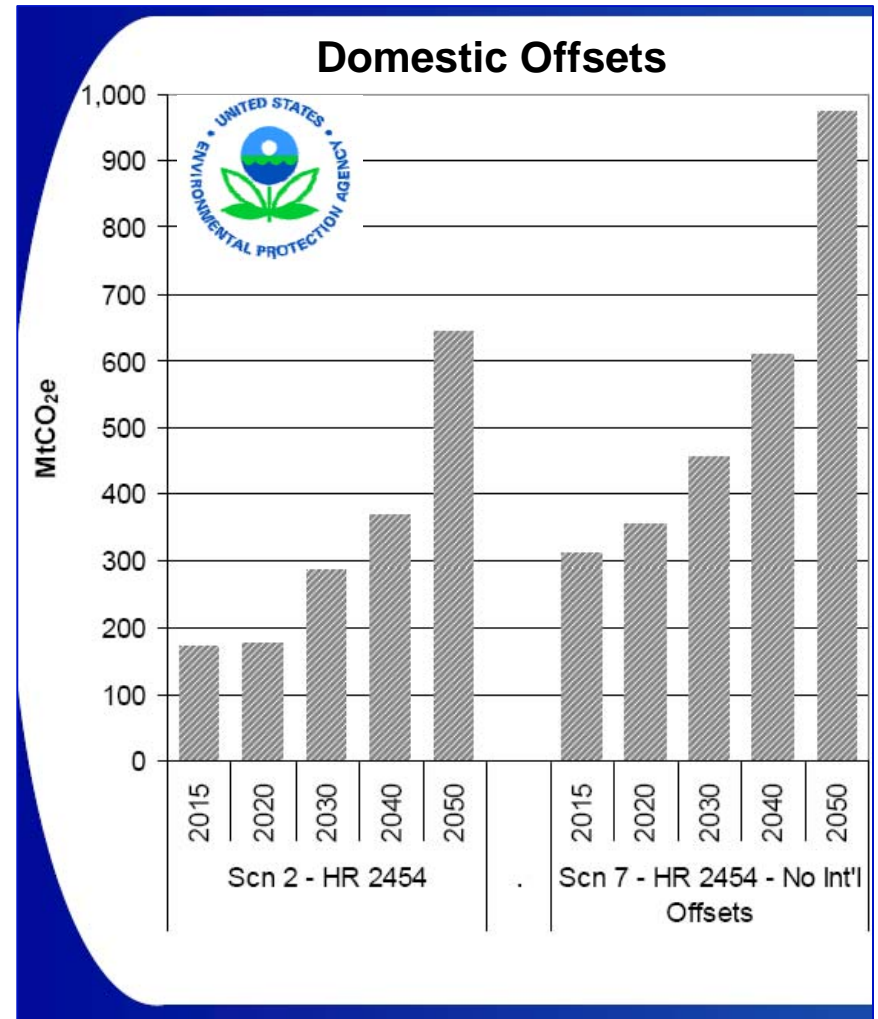


*Supplemental analysis funded by PacifiCorp, a subsidiary of MidAmerican Energy Holdings Company

Domestic Offsets in HR2454: Will Enough Come in the Near Term?

- Relatively **small potential**
- EPA estimates only ~170MtCO₂ annually through 2020
- Largest sources are **forest management & afforestation**
- **LFG, CMM, natural gas system** offsets not available due to NSPS
- Rulemakings / protocols / methodologies take time to develop

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



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

International Offsets in HR2454: Will Enough Come in the Near Term?

- Large potential, but hard to implement
 - “Sectoral” offsets
 - Offsets issued by an “international body” (e.g., CDM)
 - Reduced Emissions from Deforestation and Degradation (REDD)
- All three categories are problematic!!!

It is very difficult to see how international offsets can yield 1.5 GtCO₂/year as allowed in HR 2454, particularly at the “low” prices assumed by EPA.

Key GHG Offsets Insights

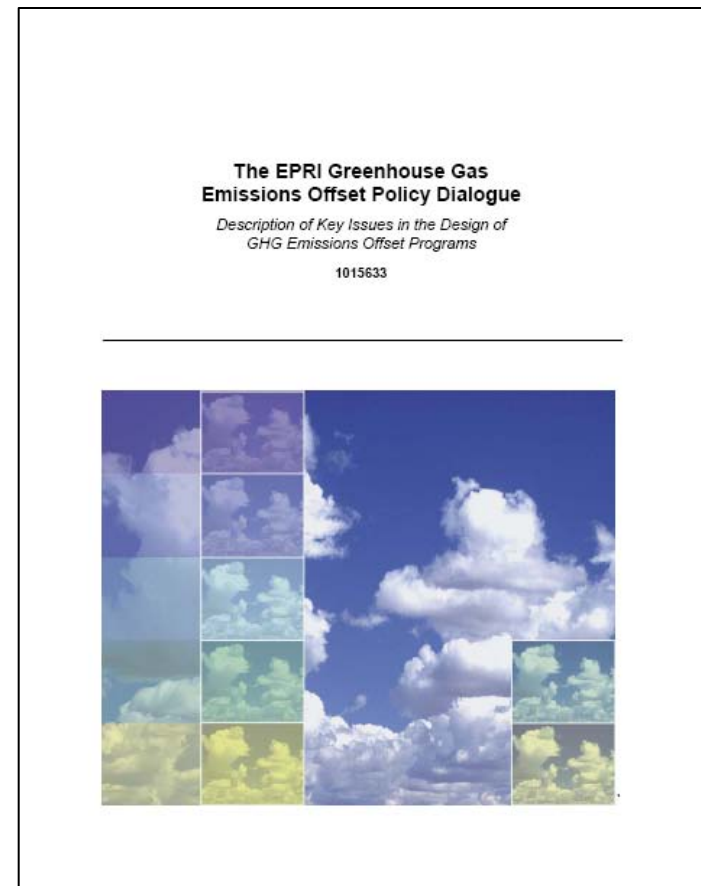
1. Important “bridge” to a low-carbon future.
2. Reduce compliance costs, achieve GHG reductions in uncovered sectors and regions and encourage innovation.
3. Inherent conflict between perfect “environmental integrity” and need for rapid development of large-scale offsets.

Key GHG Offsets Insights

4. Massive scale envisioned by HR 2454 will be difficult to realize in the near term (2012-2016), so CO₂ prices likely will rise to a level that stimulates gas-for-coal fuel switching.
5. New designs & approaches are needed to scale-up offsets to a meaningful level.
6. Offsets can help to provide a mechanism to “link” existing and evolving carbon markets around the world.

Key EPRI Offsets Documents

- Key Issues in Designing Mechanisms to Reduce Greenhouse Gas Emissions from Deforestation and Degradation (REDD) (2009). EPRI document # 1017998.
- *The EPRI Greenhouse Gas Emissions Offset Policy Dialogue: Description of Key Issues in the Design of GHG Emissions Offset Programs* (2008). EPRI document #1015633.
- “A Comprehensive Overview of Project-Based Mechanisms to Offset Greenhouse Gas Emissions” (2007) EPRI document #1014085
- “Guidance for Electric Companies on the Use of Forest Carbon Sequestration Projects to Offset Greenhouse Gas Emissions” (2006) EPRI document #1012576.



Available online at: globalclimate.epri.com/Greenhouse_Gas_Emissions_Offsets.html



Thank You

Adam Diamant

Electric Power Research Institute
Senior Project Manager
Global Climate Research Program
3420 Hillview Avenue
Palo Alto, CA 94304 USA
Tel: 510-260-9105
Email: adiamant@epri.com