Review of Waxman-Markey Climate Bill (ACES)

Mountaineer Plant - New Haven, WV

AEP AMERICAN ELECTRIC POWER®

Desert Sky Wind Farm - Pecos County TX

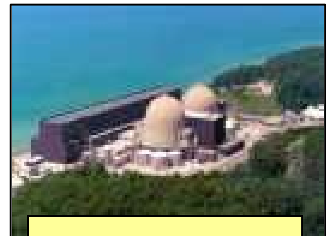
Bruce Braine, Vice President

EMA Webinar

June 4, 2009

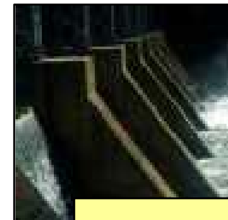
Company Overview

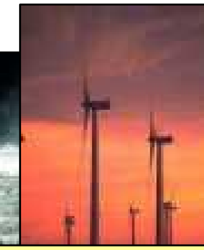
Nat. Gas/Oil
24%



Nuclear
6%

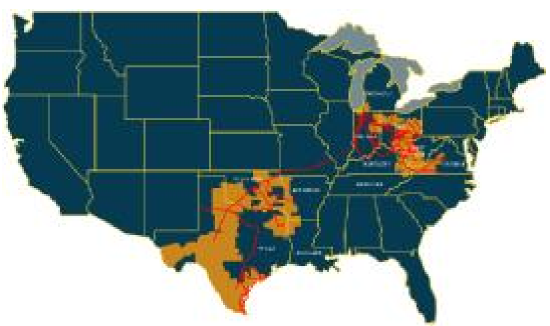
Coal/Lignite
67%





Pumped Storage/ Hydro/Wind
3%

AEP's Generation Fleet
38,060 MW Capacity



5.1 million customers in 11 states
Industry-leading size and scale of assets:

Asset	Size	Industry Rank
Domestic Generation	~38,300 MW	# 2
Transmission	~39,000 miles	# 1
Distribution	~208,000 miles	# 1

Background: Climate Policy Status

- **House Climate AND Energy Bill Passes**--Under leadership of Waxman and Markey, American Clean Energy and Security (ACES) bill has passed out of the Energy and Commerce Committee. Uncertain jurisdiction issues with Agriculture (e.g. offsets and farm sector regulations) and Ways and Means (e.g. auction revenue). Floor debate/action expected June/July.

- **Senate is waiting on House activity** –Bingaman and others are active on renewables/energy efficiency legislative side, but not on climate yet.

- **Moderate Democrats in House led by Boucher played a key role** in the structure of the bill (particularly on allocation). Moderate democrats are vital swing votes needed for overall passage in the House as almost all Republicans are likely to oppose. Similar dynamic exists in Senate.

- **Administration Still Indicates Climate as a "Priority."** Using EPA Regulatory Action on CO_2 as a potential "stick."

- **Passage possible though probably difficult in 2009, but still believe it is "likely" by 2010.**

AEP Position: A "Reasonable" Approach to Climate Legislation

- **Reductions and Timing -** Moderate with Adequate Lead Times
- **Scope of Program -** Economy Wide
- **Flexibility of the Program -** Trading, Banking, Unrestricted Offsets, Early Action Credits
- **Allowance Allocation And Other Cost Issues -** Full Allocation to Electrics and "Low" auctions
- **Technology Development/Deployment -** Bonus allowances or other support for carbon capture and storage
- **International Linkage -** e.g. AEP-IBEW Proposal

AEP Supports Waxman-Markey Bill As Revised and Supports Constructive Revisions Needed in the Future

Summary of Major Provisions of ACES

Targets and Timetables

- 2012: 3% below 2005 levels
- 2020: 17% below 2005 levels (Original Bill: 20%)
- 2030: 42% below 2005 levels
- 2050: 83% below 2005 levels

Allowance Allocations (2016-25)

- Electric Sector- 35% (approx. 90% of sector “share” of cap)
- Industrials-13.5%
- Natural Gas LDCs-9%
- Domestic Refiners-2%
- Autos for Advanced Technology-1%
- CCS Set Aside-5% (2% prior to 2017)
- Auctioned (for Low Income/Adaptation/Intl./Other)-35%

Industry Allocation Phase-Out

- Almost all allocations phased out 2025-2030/ 90% auction by 2030

Summary of Major Provisions of ACES (continued)

Carbon Capture and Storage-

- Includes Boucher Wires Charge $1 billion a year for demonstration and deployment
- Extra allowance subsidies for up to 72 GW of CCS (from allowance "set aside")

Offset Provisions

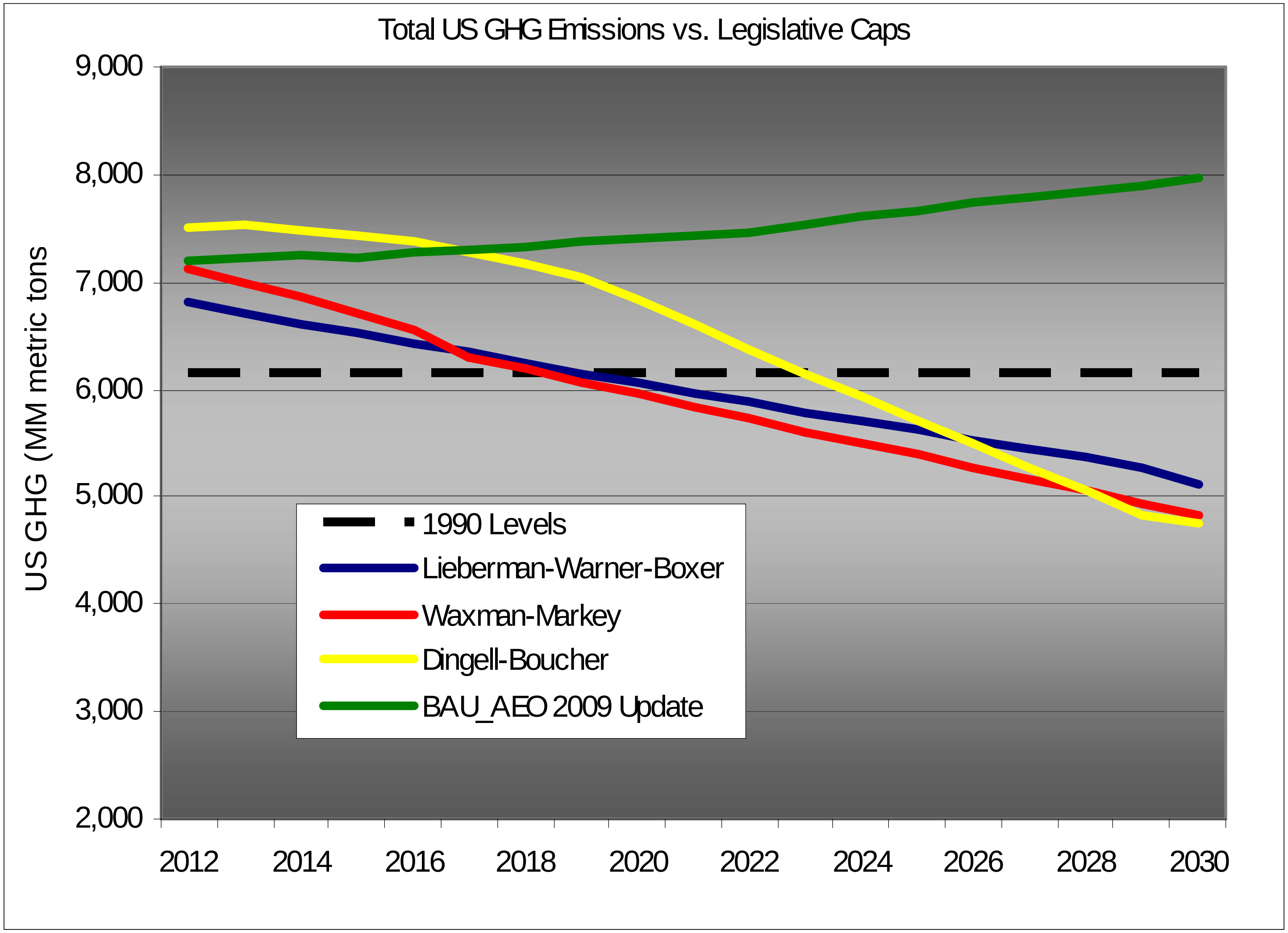
- Overall Limit of 2 Bill. Tons/ Yr. Up to 1.5 Bill. Tons Internationally
- No discounting for Domestic Tons
- 20% Discount on International Tons beginning in 2018
- No coal mine or landfill methane offsets in US
- International REDD (i.e. avoided deforestation) allowed. 5% set aside to help fund and some sub-national REDD allowed.

Renewable Energy (RE) and Energy Efficiency (EE) Standard

- Combined 20% of retail sales requirement by 2020
- Up to 5% thru EE; up to 8% w/ governor approval

AEP®

Waxman-Markey Caps



AEP®

EEI Allowance Allocation Proposal

Electric Sector | Transport | Industry | Other

Total Capped Emissions
~ 6 Billion Tons

40% | 33% | 17% | 10%

Share of Capped Emissions

EEI 50 50 50 Allocation

Sector Allocation = 40% of US Emission Cap
<u>Initial Full Allocation</u>, but allocation will decline over time as both overall cap declines and auction phases-in.

Approx. % of Electric Sector Allocation

~46% | ~46% | ~8%

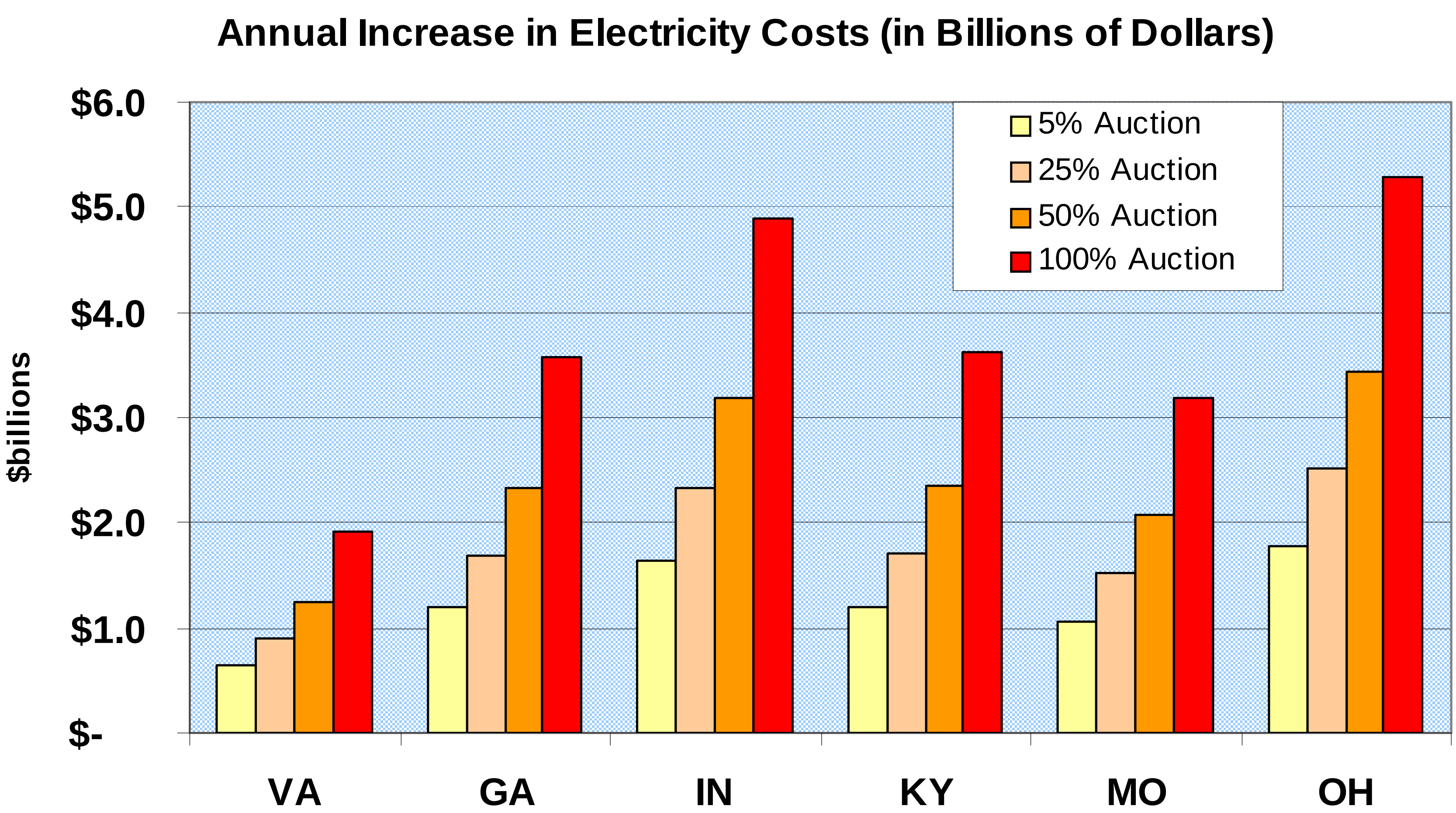
LDCs Based on Retail Sales | LDCs Based on Emissions | Merchant Coal

<u>50-50-50</u>

<u>50%</u> Output-based to LDCs | **<u>50%</u>** Input-based to LDCs | **<u>50%</u>** of Merchant Coal Emissions

AEP®

No. 1 Cost Issue--Auction vs Allocation: Increase in Customer Electricity Costs



Based on a 30 % reduction in electric sector GHG emissions with CO_{2e} reductions / allowances costing $40 / ton

AEP®

CCS Development and Deployment Mechanisms in W-M

- **CCS "Wires Charge"**
  - Provides $1 billion in funding annually for 10 years to develop and deploy CCS technology.
- **CCS Allowance Set Aside**
  - 5.5 billion allowances available through 2050. Total Value: $0.2-0.4 Trillion
  - Phase 1: Fixed funding for first 6 GW of commercial deployment.
    - Sliding scale allowance subsidy based on project capture rate.
    - $50/ton @ 50% capture up to $90/ton @ 85%+ capture
    - Awards are for the first 10 years of CCS operation.
  - Phase 2: "Reverse Auction" Funding for up to next 66 GW of deployment.
    - Projects bid for subsidy based on economic support needed to justify project.
    - Theoretically the value between the market CO2 price and the cost of CO2 capture.
    - Awards are for the first 10 years of CCS operation.

AEP®

ACES Bill: Key Issues Going Forward

Allocation of Allowances

- **Key Issue**: **5 Yr. (2025-30) Phase Out for Electrics= 2030 Rate Shock**
- **Analysis**: Though longer term, still a priority for AEP and electrics since a majority of costs driven by allocations versus auctions.
- **Potential Solution**: **15 Yr. Phase Out (2025-40) Phase Out Instead.**

Emission Cap Levels and Timing

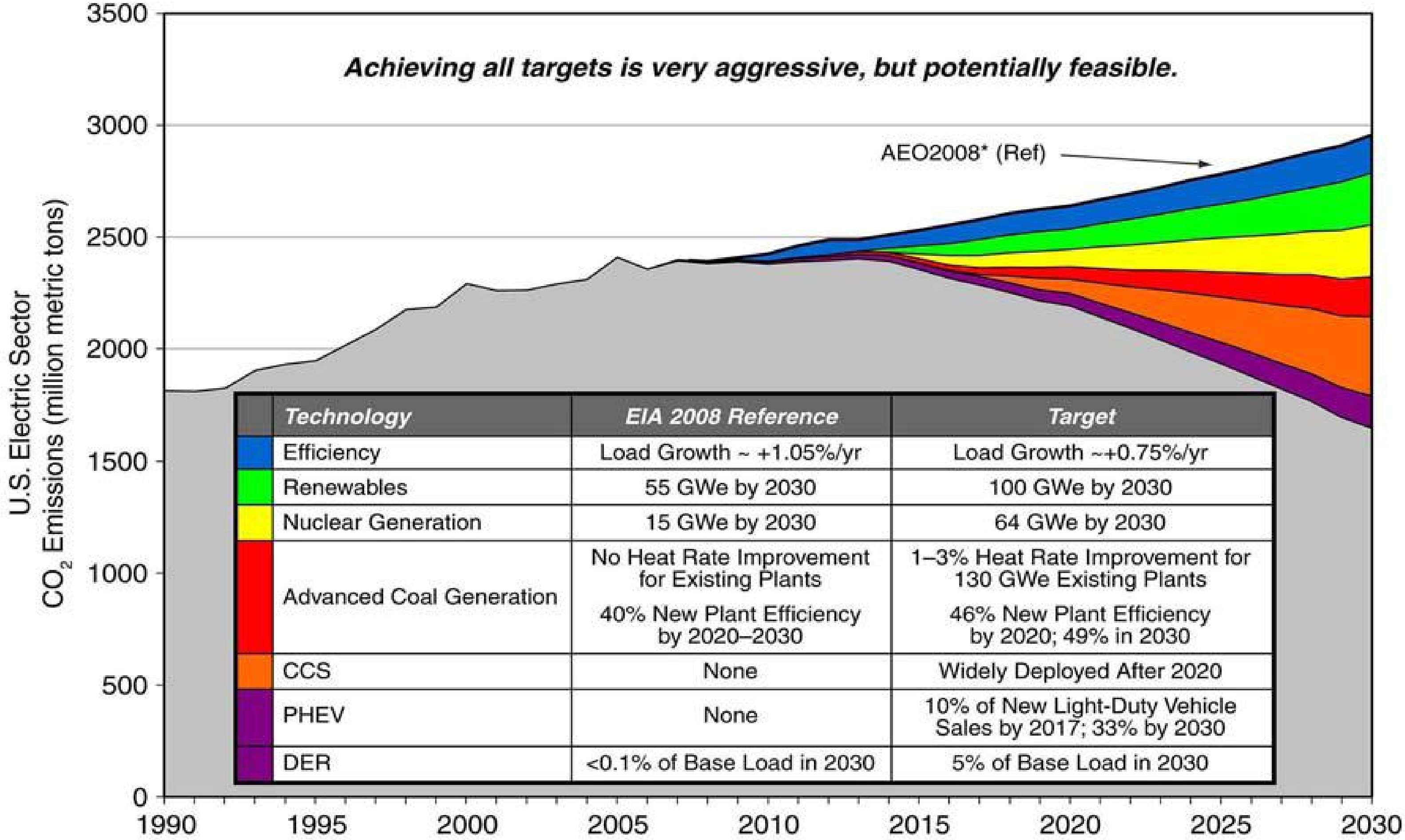
- **Key Issues: Emission cap of 17% below 2005 levels in 2020** is 3% more stringent than the original Obama target of 14% and much more stringent than Boucher/Dingell target. Concern about availability of CCS and coal production losses. 2012 start date is very aggressive.
- **Potential Solution:** Emission cap levels revised downward to 14% in 2020 and first year of compliance delayed.

Offset Provisions

- **Key Issue:** Though much improved, bill is still too limited on offsets
- **Potential Solutions**: Remove 20% “haircut” for long term international offsets (i.e. 1 offset tone = 1 emission allowance). Distinctions on types and percentages of offsets used for compliance should be removed or loosened. Domestic landfill and coal mine methane offsets should be allowed.

AEP®

Bottom Line: Long Run US Climate Targets are Aggressive and Require a Portfolio



Technology	EIA 2008 Reference	Target
Efficiency	Load Growth ~ +1.05%/yr	Load Growth ~+0.75%/yr
Renewables	55 GWe by 2030	100 GWe by 2030
Nuclear Generation	15 GWe by 2030	64 GWe by 2030
Advanced Coal Generation	No Heat Rate Improvement for Existing Plants 40% New Plant Efficiency by 2020–2030	1–3% Heat Rate Improvement for 130 GWe Existing Plants 46% New Plant Efficiency by 2020; 49% in 2030
CCS	None	Widely Deployed After 2020
PHEV	None	10% of New Light-Duty Vehicle Sales by 2017; 33% by 2030
DER	<0.1% of Base Load in 2030	5% of Base Load in 2030

ELECTRIC POWER RESEARCH INSTITUTE