

January 2006

Status Report: AEP's Climate Leaders Commitment

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Senior Engineer



AEP: America's Energy Partner®

Agenda

- **AEP Overview**
- **Progress Toward Commitments**
- **GHG Inventory Implementation**
 - Data Links
 - Projects
- **GHG Inventory Management Plan**



About Us

Chairman, President, Chief Executive : Michael G. Morris

2004 ongoing earnings: \$924 million

2004 ongoing earnings per share \$2.33

2004 Revenues: \$14.1 billion

2004 Assets:\$34.7 billion

U. S. employees: 20,000

States served: AK, IN, KY, LA, MI, OH, OK, TN, TX, VA, WV

Service territory: 197,500 square miles

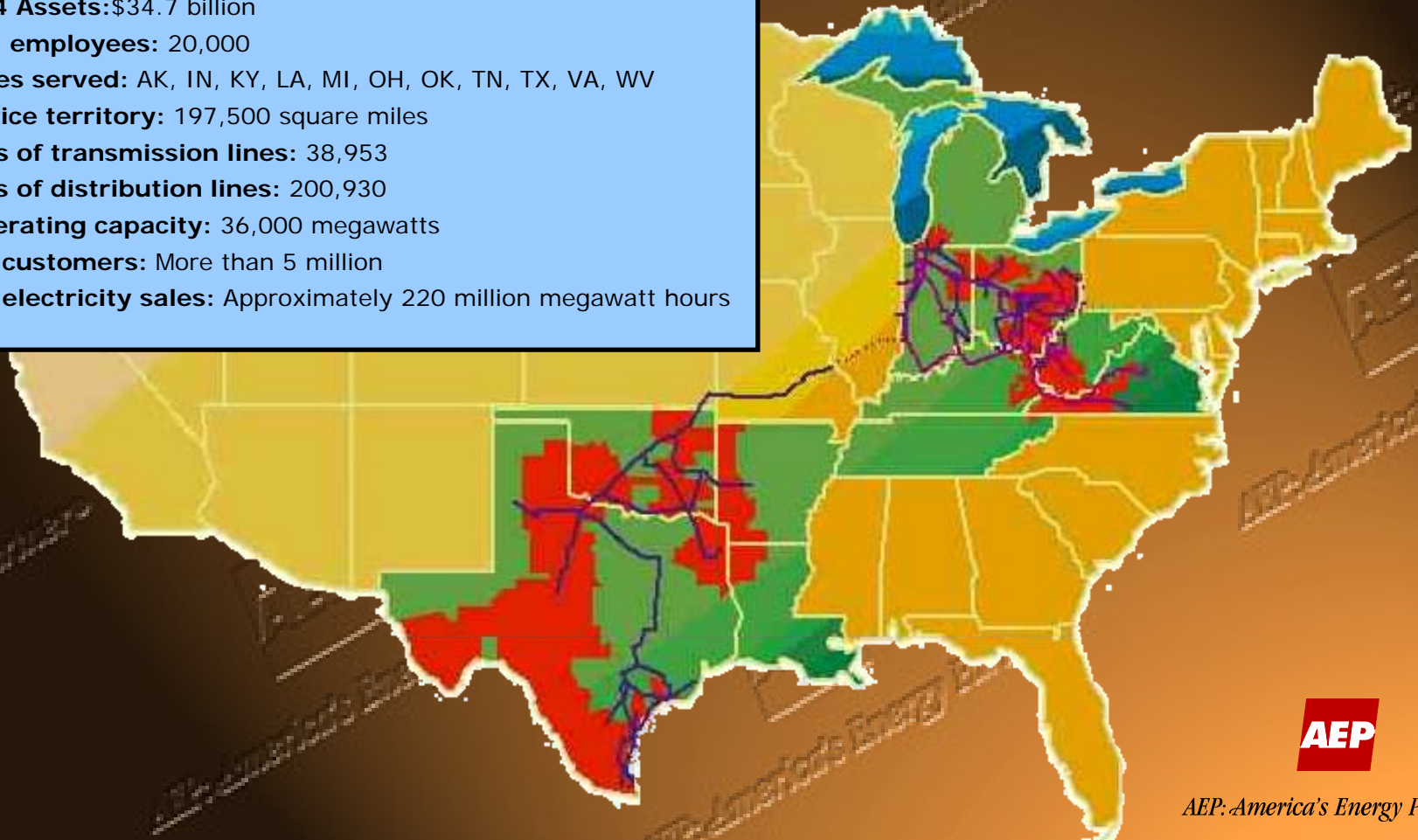
Miles of transmission lines: 38,953

Miles of distribution lines: 200,930

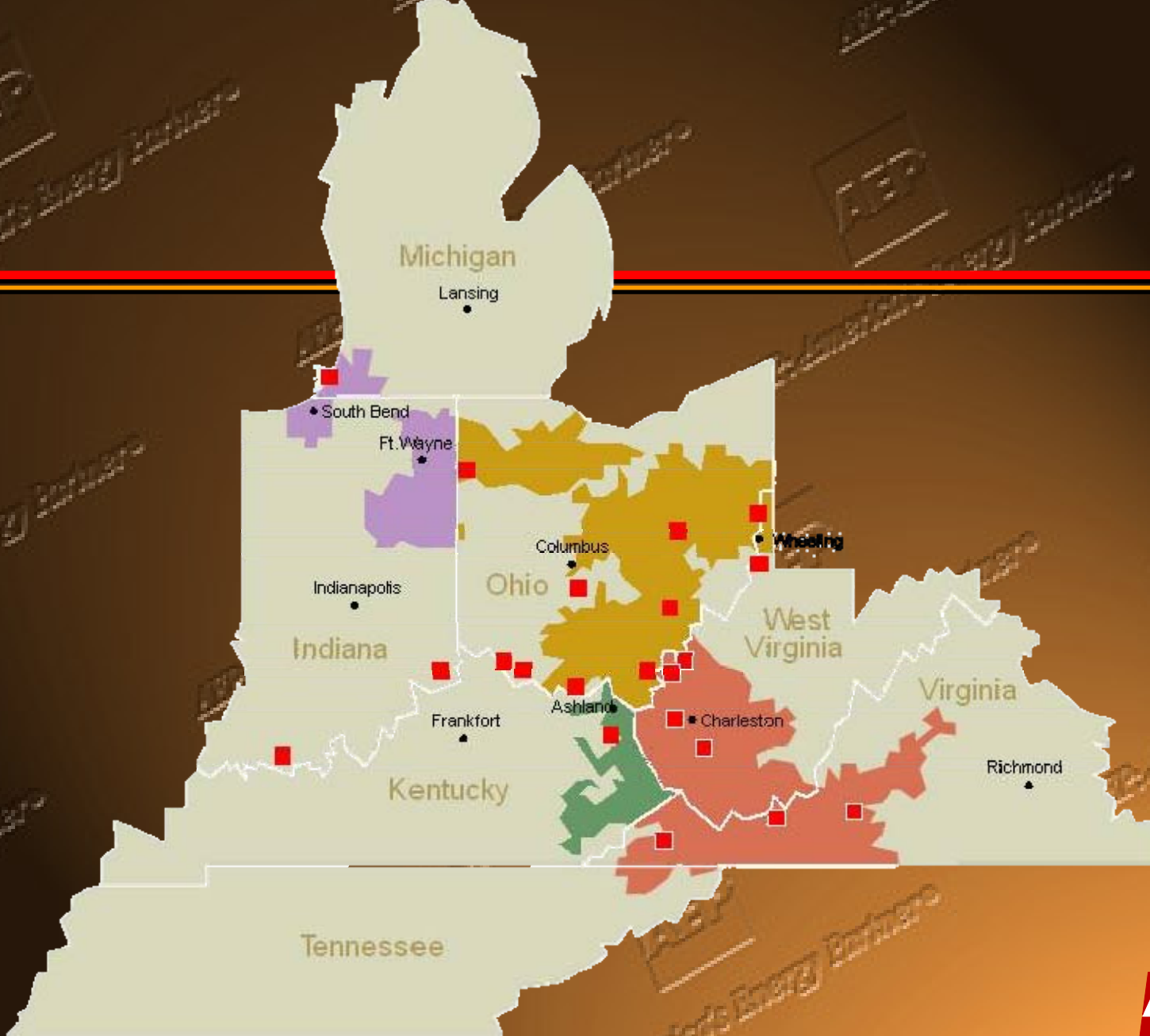
Generating capacity: 36,000 megawatts

U.S. customers: More than 5 million

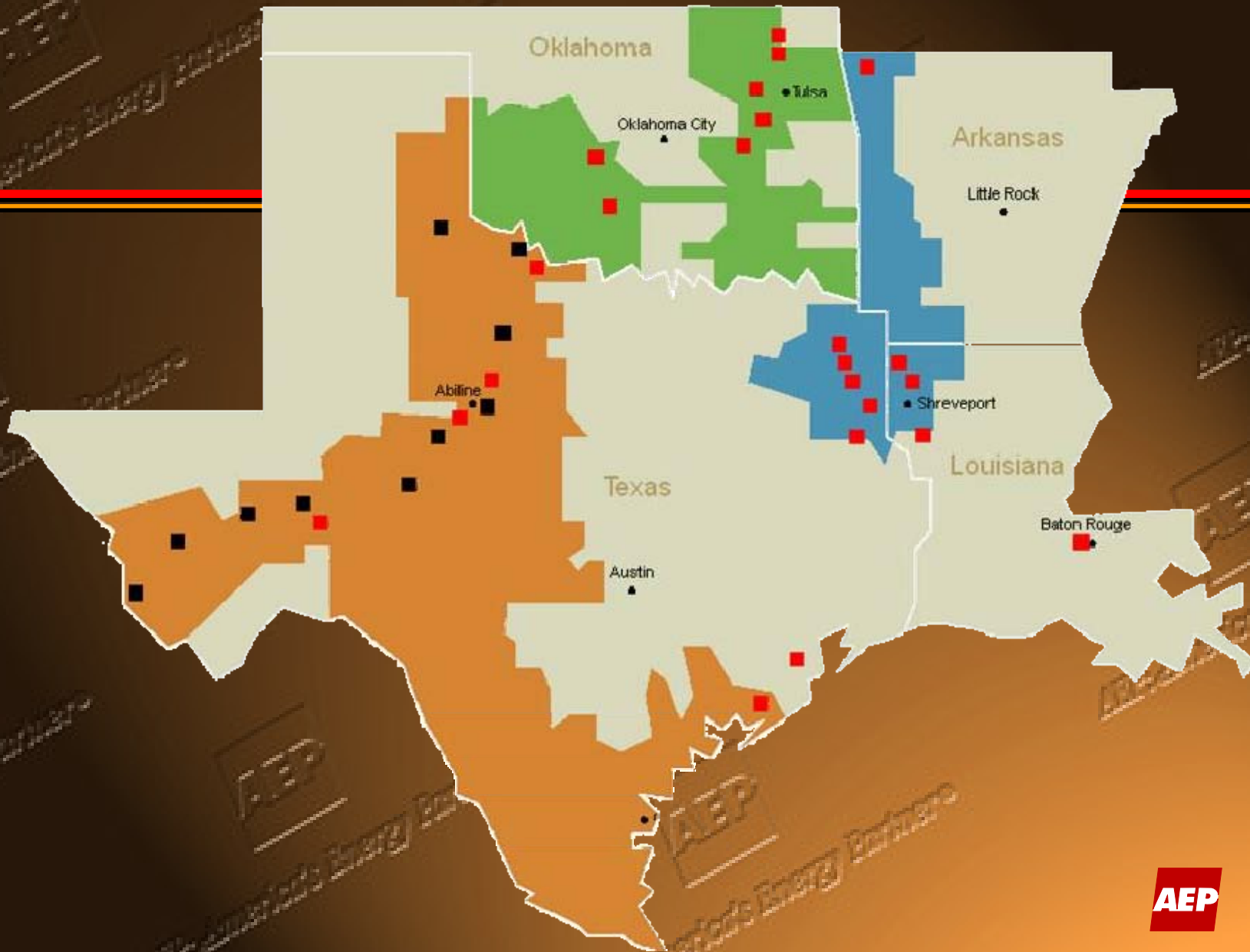
U.S. electricity sales: Approximately 220 million megawatt hours



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AEP's Voluntary Greenhouse Gas Initiatives

- Major supporter of science and technology R&D
 - DOE FutureGen Project Investor
 - DOE/ Battelle/MIT Carbon Sequestration Research
 - EPRI and MIT Energy Laboratory Research
- Voluntary actions to reduce, avoid, or sequester GHG emissions (e.g. EPA Climate Leaders, e7 consortium, DOE Climate Challenge, BRT Climate Resolve, EEI Climate Partners)
- Founding member of the Chicago Climate Exchange (CCX)
 - Cumulative 10% reduction (2003-2006) from 1998-01 baseline
 - First company to extend commitment to 2007-10 period (additional 2% reduction)
 - Cumulative CO₂e reductions(2003-10) about 46 MM Metric Tons



AEP's Specific Actions To Address Climate Change

- Plant efficiency improvements
- Retirements/mothballing old gas steam & coal units
- Nuclear availability improvements
- Forest management and reforestation projects
- Sulfur Hexafluoride process improvements
- Renewable energy (e.g. wind generation and biomass co-firing)
- Developing/building technology for future coal generation (e.g. Integrated Gasification Combined Cycle - IGCC)
- Research on technology for CO₂ capture and storage



AEP's GHG Inventory Participation

- DOE/EIA 1605(b) Climate Challenge
- Chicago Climate Exchange
- EPA Climate Leaders
- Climate VISION Power Partners (Electricity Sector)

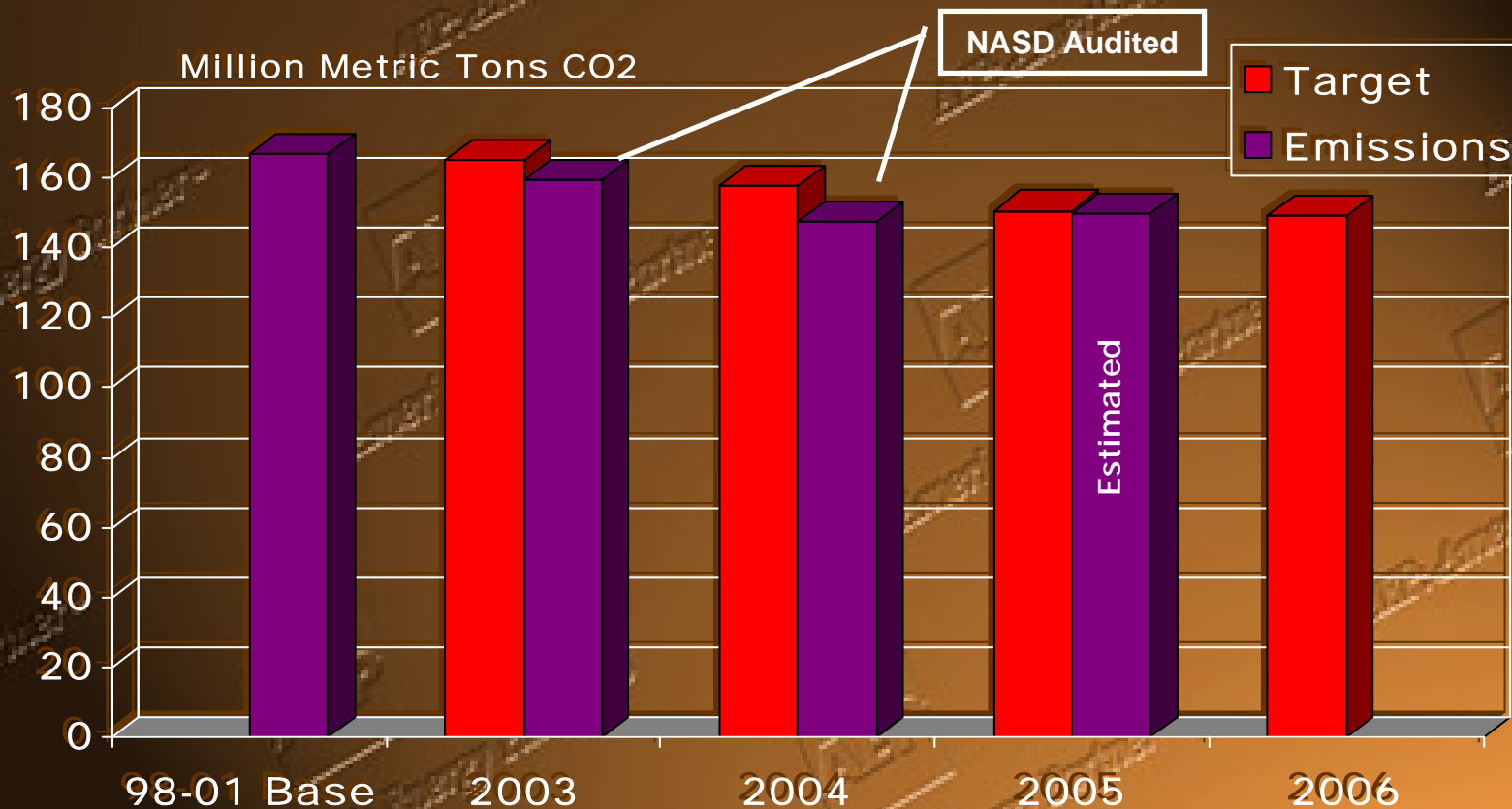


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AEP's GHG Goal Performance



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System Models

- AEP (Home)
- 05 User Conference - Program Management

Desktop Today is: 1/18/2006

New Tasks: 0 New Messages: 0 New Data Warnings: 836

Show: Tasks Messages Data Warnings All

Show: Today This Week This Month

Tasks

Name	Description	Task Due	Comments	Status
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[^ Link to top ^](#)

Messages

Name	Date	Sent By	Object Name
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[^ Link to top ^](#)

Data Warnings

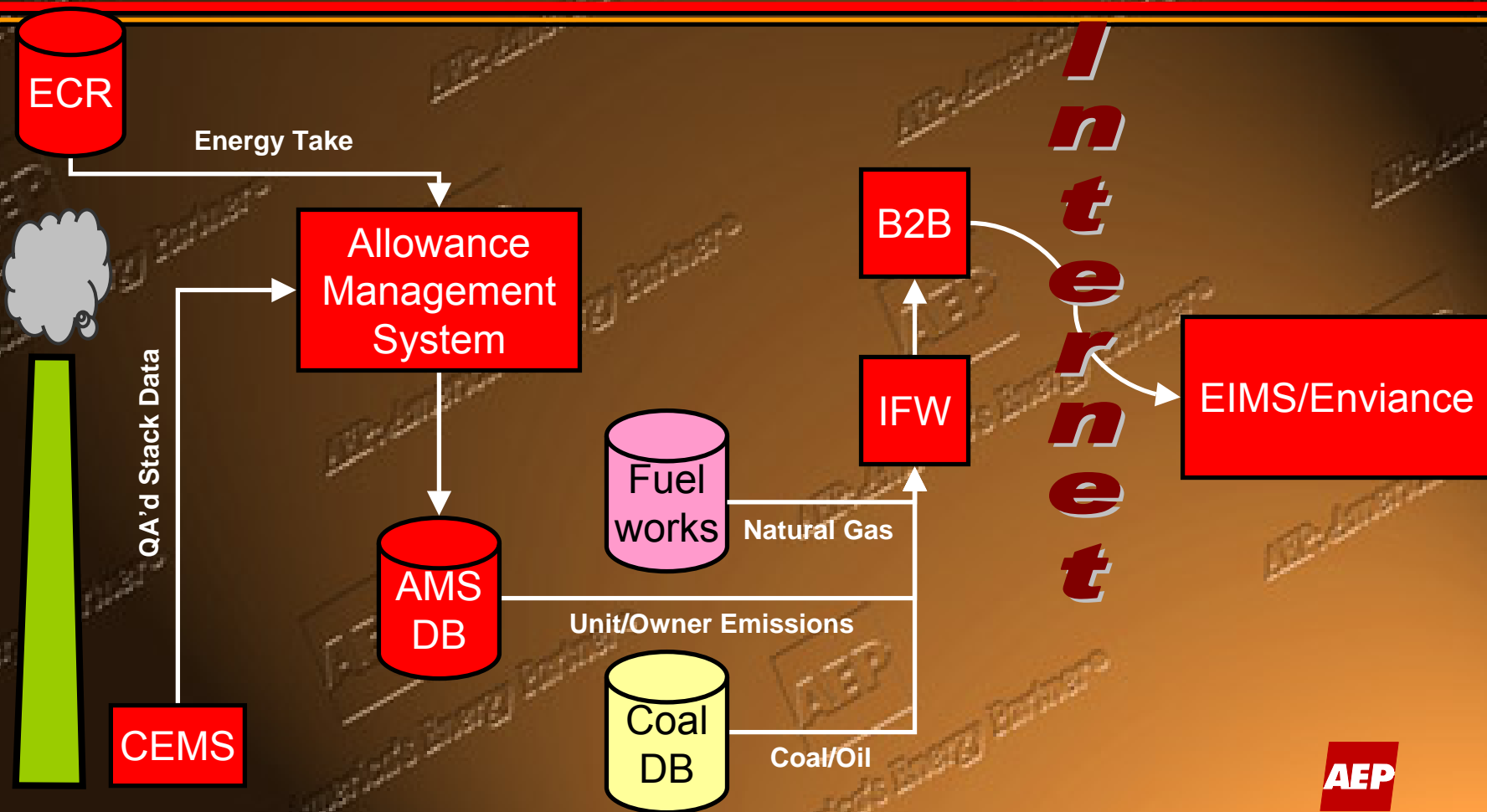
Type	Data Entry Date	Data Entered By	Complete Date	Object Name
Regulatory Limit Warning	1/18/2006 8:11 AM	Michael Bayes	12/31/2005 5:00 AM	AEP* AEP Environmental Performance\Air Quality\Scoring
Internal Limit Warning	1/18/2006 8:11 AM	Michael Bayes	12/31/2005 5:00 AM	AEP* AEP Environmental Performance\Air Quality\Quarterly Incidents

Data Integration Is The Heart

- **For Many Utilities CEMS Covers Majority Of GHG Emissions**
 - 95%+ Of AEP's Baseline Is From Title IV Power Generation
- **Enviance Offered A Flexible Platform That Will Allow Us To Participate In Various Inventories**
- **Central Databases Makes This Integration Possible**
- **Still Need Manual Entry For Special Items**
 - Non-Title IV Oil And Gas Burners – 2nd Qtr 2006
 - Biomass Calculations
 - SF6 & Forestry Projects



AEP's Central Databases



- System Models
- Fort Wayne Spy Run Service Center
 - Fremont Service Center
 - Gavin
 - Air - CEM Walkdown Data for Unit 1
 - Air - CEM Walkdown Data for Unit 2
 - Air - Title V
 - AMS Annual Emissions
 - AMS Hourly Emissions
 - Unit 1 (OPCo)
 - # 1 Net Generation
 - # 2 Gross Generation
 - # 3 Heat Input
 - # 4 SO2
 - # 5 NOx
 - # 6 CO2
 - Unit 2 (OPCo)
 - AMS Monthly Emissions
 - CCX
 - Gen J M Gavin 1 (8102)
 - # CO2 Tons
 - ◇ Comments
 - # Emission Baseline (1998-2001)
 - # Percent Ownership
 - Gen J M Gavin 2 (8102)
 - # CO2 Tons
 - ◇ Comments
 - # Emission Baseline (1998-2001)
 - # Percent Ownership
 - CEM Events & Performance Statistics
 - CEMS Hourly Stack Data
 - COM Opacity Events
 - Compliance Calendar
 - Fuel: Coal (Solarc)
 - Fuel: Coal (Solarc) Annual
 - Fuel: Oil (Solarc)
 - Fuel: Oil (Solarc) Annual
 - Quarterly Unit Operating Hours
 - Gavin * Reference Library for TRI Calcula...

Data Manager

VIEW DATA

Data Collector: Time Zone: USA Eastern Std

Date	1 Net Generation (MWh)	2 Gross Generation (MWh)	3 Heat Input (MBtu)	4 SO2 (Tons)	5 NOx (Tons)	6 CO2 (Tons)
<u>9/8/2005</u>						
12:00 AM	0	0	0.0	0.000	0.000	0.0
1:00 AM	0	0	0.0	0.000	0.000	0.0
2:00 AM	0	0	0.0	0.000	0.000	0.0
3:00 AM	0	0	0.0	0.000	0.000	0.0
4:00 AM	0	0	0.0	0.000	0.000	0.0
5:00 AM	0	0	0.0	0.000	0.000	0.0
6:00 AM	0	0	0.0	0.000	0.000	0.0
7:00 AM	0	0	0.0	0.000	0.000	0.0
8:00 AM	0	0	0.0	0.000	0.000	0.0
9:00 AM	0	0	0.0	0.000	0.000	0.0
10:00 AM	0	0	0.0	0.000	0.009	250.7
11:00 AM	0	0	0.0	0.000	0.067	233.3
12:00 PM	0	0	0.0	0.154	0.193	226.2
1:00 PM	0	0	0.0	0.455	0.181	221.2
2:00 PM	0	0	0.0	0.255	0.191	217.5
3:00 PM	0	2	0.0	0.580	0.197	213.5
4:00 PM	10	60	109.1	0.807	0.213	212.0
5:00 PM	25	73	272.6	0.774	0.202	210.0
6:00 PM	64	120	697.9	0.101	0.356	267.6
7:00 PM	148	207	1614.0	0.236	0.398	259.2
8:00 PM	274	335	2988.0	0.380	0.615	332.9
9:00 PM	604	675	6353.2	2.106	0.818	608.0
10:00 PM	935	1015	9343.4	2.783	1.698	801.1
11:00 PM	1184	1271	11717.2	2.061	1.514	958.7
<u>9/9/2005</u>						
12:00 AM	1284	1375	12700.6	1.606	0.256	1030.9
1:00 AM	1281	1372	12670.9	1.540	0.314	1024.1
2:00 AM	1182	1268	11697.7	1.463	0.287	935.8
3:00 AM	1263	1354	12492.7	1.484	0.289	1006.4
4:00 AM	1286	1377	12720.5	1.597	0.343	1034.5
5:00 AM	1299	1389	12849.6	1.596	0.283	1037.7
6:00 AM	1297	1387	12829.7	1.506	0.319	1038.2

Data Integration Issues

- **Sarbanes Oxley Frustration**
- **Emission Ownership Issues**
 - Allowance Management System Splits Emission By Energy Take
 - CCX Uses Equity Share
 - Recombine To Whole Unit And Redistribute
- **Fuel Databases In Transition**



Date Based Data Report

Date: 12/31/2005 12:00 AM

	CO2 TONS	EMISSION BASELINE (1998-2001)
	Data Value	Data Value
AEP\Abilene\CCX\Abilene 4 (3517)\	0	6269.26
AEP\Amos\CCX\John E Amos 1 (3935)\	3777837.05506032	4248482.94
AEP\Amos\CCX\John E Amos 2 (3935)\	3457697.45473152	4271225.02
AEP\Amos\CCX\John E Amos 3 (3935)\	5599956.56147424	5536409.33
AEP\Arsenal Hill\CCX\Arsenal Hill Power Plant 5A (1416)\	51986.21148	131357.57
AEP\Barney Davis\CCX\Barney M. Davis 1 (4935)\	-	887154.51
AEP\Barney Davis\CCX\Barney M. Davis 2 (4935)\	-	1069369.01
AEP\Beckjord\CCX\Walter C Beckjord 6 (2830)\	0	321739.03
AEP\Big Sandy\CCX\Big Sandy BSU1 (1353)\	803089.75195008	1678819.87
AEP\Big Sandy\CCX\Big Sandy BSU2 (1353)\	3152985.36792624	4983002.27
AEP\Breed\CCX\Brush Gen1/Gen2 (Exempt 10683)\	-	48848
AEP\Cardinal\CCX\Cardinal 1 (2828)\	2029898.76012	2785645.51
AEP\Clinch River\CCX\Clinch River 1 (3775)\	905401.26471312	1319763.81
AEP\Clinch River\CCX\Clinch River 2 (3775)\	987697.23095232	1371434.18
AEP\Clinch River\CCX\Clinch River 3 (3775)\	760666.62924	1405488.97

Additional Project Data Capture

- **Forestry Projects**
- **SF6 Project**
- **Biomass Co-firing**
- **De-Minimis Calculations**



- System Models 12/30/11 X
- * AEP SF6 Management
 - EEI SF6 Worksheet
 - *Comments re: Additions to Inventory
 - *Comments re: Changes to Nameplate
 - *Comments re: Inventory
 - *Comments re: Subtractions from Inven
 - # 1. Purchases of SF6
 - # 2. SF6 returned from off-site recyclers
 - # 3. Sales of SF6
 - # 4. Returns of SF6 to supplier
 - # 5. SF6 & equipment taken from storage
 - # 6. SF6 & equipment from storage to offs
 - # 7. Total nameplate capacity of new equi
 - # 8. Total nameplate capacity of retiring e
 - # A. Inventory at Beginning of Year
 - # B. Inventory at End of Year
 - # C. Total Additions to Inventory
 - # D. Total Subtractions from Inventory
 - # E. Change to nameplate capacity
 - # Nameplate capacity of new equipment
 - # Nameplate capacity of retiring equipmer
 - # Purchases of SF6
 - # Returns of SF6 to supplier
 - # Sales of SF6
 - # SF6 returned after off-site recycling
 - # SF6 taken from storage and disposed
 - # SF6 taken from storage and recycled off
 - # Total Annual Emissions
 - SF6 Emissions
 - # 1. AEP-East
 - # 2. AEP-West
 - # 3. AEP
 - # AEP SF6 Baseline
 - # AEP SF6 Baseline CO2e
 - Comments
 - SF6 Gas Reduction
 - Comments
 - # Leakrate

Data Manager

SEARCH

Begin Date:

End Date:

Data for 3. AEP (lbs)

[VIEW DATA](#)

Time Zone: Eastern

Page 1 of 1

Results per page:

Page 1

Collector	Complete Date	Value	Comply	Internal Comply
Calculated by computer	12/31/2002	13870	N/A	N/A
Calculated by computer	12/31/2001	14705	N/A	N/A
Calculated by computer	12/31/2000	15885	N/A	N/A
Calculated by computer	12/31/1999	25183	N/A	N/A
Calculated by computer	12/31/1998	18005	N/A	N/A

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Inventory Maintenance Plan Development

- **Checking CEMS**
- **Check Fuel Calculations**
- **Gather And Check Forestry/SF6/Other Project Data**
- **Annual Check Of De-minimis Calculations**



- System Models
- * AEP Enforcement Tracking
 - * AEP GHG Inventory Management Plan
 - Auditing and Verification
 - Corrective Action
 - External Validation and or Verification
 - Internal Auditing
 - Management Review
 - Base Year
 - Base Year (Data Adjusted)
 - Base Year (Original)
 - Adjustment - Methodology Changes
 - Adjustment - Structural Changes
 - Boundary Conditions
 - Operational
 - Organizational
 - Data Management
 - Normalization Factors
 - Activity Data
 - Data Collection Process - Normaliza
 - Data Collection Process - Quality As
 - Data Collection System Security
 - Data Management
 - Frequency
 - Integrated Tools
 - Normalization Factor(s) Selection
 - Emissions Quantification
 - Emission Factors
 - Emission Factors and Other Constar
 - Quantification Method
 - Management Tools
 - Document Retention and Control Po
 - Roles and Responsibilities
 - Training
 - * AEP Safety
 - * AEP SF6 Management
 - * AEP TRI Constants
 - * Allowance Management System
 - * Acknowledged AEP Safety Demo

Calendar

Monthly View

January 2006 Go

Today

Dec	January 2006							Feb
Mo	Su	Mo	Tu	We	Th	Fr	Sa	
	25	26	27	28	29	30	31	
W	1	2	3	4	5	6	7	
W	8	9	10	11	12	13	14	
W	15	16	17	18	19	20	21	
W	22	23	24	25	26	27	28	
W	29	30	31	1	2	3	4	

My Tasks

Show: Tasks I Assigned

Tasks I May View

Apply

January 2006						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

Auditing

- **CCX Uses NASD**
 - Experience with NASD
- **Climate Leaders**
 - CH2M Hill
- **Climate Challenge**



GHG Inventory Future Development

- **Complete The Fuel Integration**
- **Forestry Projects**
- **Develop De-minims Calculations**
 - Truck/Rental/Barge Fleet
 - Service Building Heating
 - CFC Emissions
- **Possible Expansion Of Reporting To More Registries**



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