MONTANA-DAKOTA UTILITIES CO.

Preliminary Impacts of 111 d

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In the Community to Serve®

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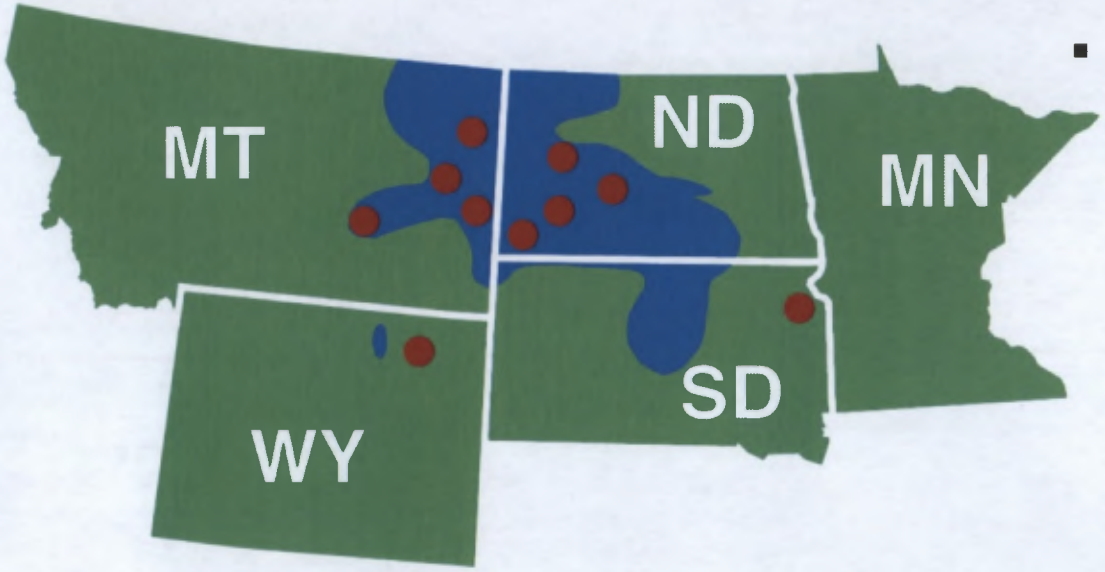
MDU presentation
Montana-Dakota Utilities Co., a Division of MDU Resources Group, Inc.

Montana-Dakota Generation



- Own 553 MW of generation 75%
  - 395 MW coal-fired 53%
  - 103 MW gas turbines 14%
  - 55 MW renewable power 8%
    - 49.5 MW wind generation
    - 5.3 MW heat recovery generation
- 189 MW purchased power 25%

125,000 retail customers – Integrated System

Growth rate of 5.81% per year for 2014-2019

Status of Existing Generation

Coyote Station

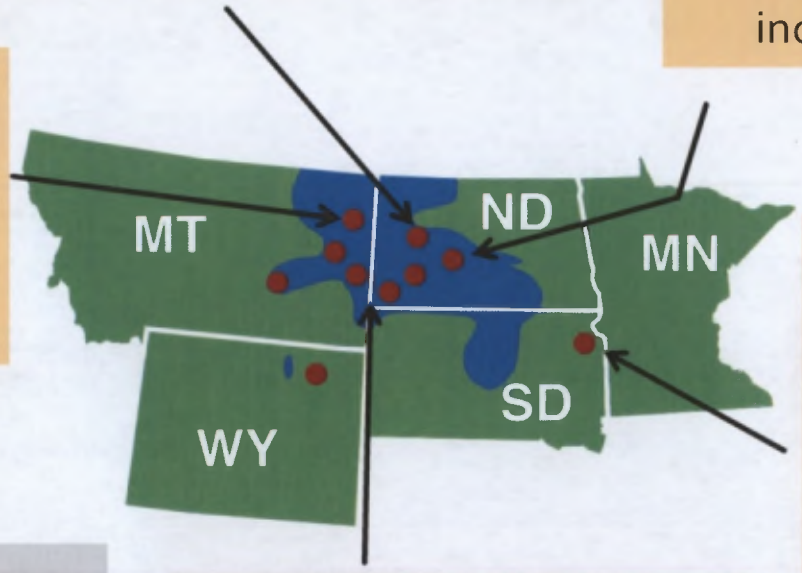
- Most major heat improvements already achieved

R.M. Heskett Station

- Regional Haze 2016 SO_2 reduction project slightly increases CO_2 emissions

Lewis & Clark Station

- MATS 2015/2016 gas co-fire slightly reduces CO_2 emissions



Big Stone Plant

- Regional Haze 2016 AQCS project challenge for heat rate improvement
- Most major heat improvements already achieved
- EPA proposed steep generation reduction for Building Block 2

Gas Simple Cycle Peakers

- R.M. Heskett ND
- Glendive MT
- Miles City MT

Wind

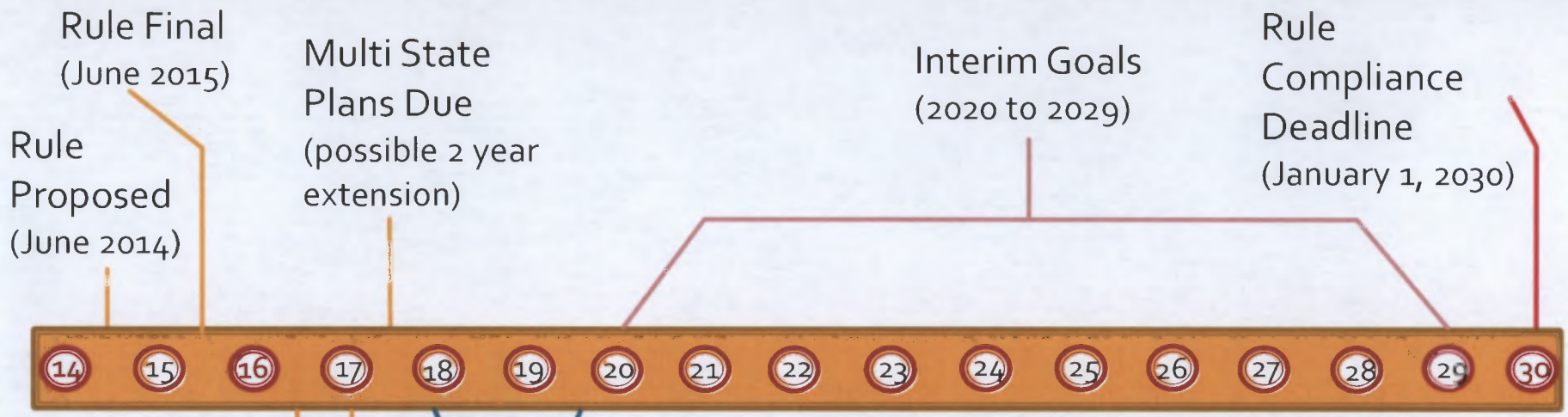
- MT and ND
- MT's share of ND wind is used for MT RPS

EPA – Clean Power Plan

- Clean Air Act 111(d) Rule - 2014
  - Pre-published June 2 and in Federal Register June 18
  - Comments due by October 16
  - EPA Goal (Option 1)
    - Goal is based on EPA's proposed Best System of Emission Reduction (BSER) calculations
    - 30% CO_2 mass reduction from 2005 electric sector emissions. However, EPA uses 2012 baseline emissions to measure reductions from, effectively discounting some reductions made before 2012
    - 733 million metric tons (about 2% of projected 2030 global energy-related CO_2 emissions)

733 mm tonnes CO2 reduced in 2030 from 2005 -Table 3-6 of EPA RIA for GHG Rule and IPCC projected 39,025 MtCO2 in Table 4.6 of Fourth Assessment Report: Climate Change 2007.

Clean Power Plan Timing



Regional Haze state plans took 5 to 7 or more years to develop and submit.

Expect states need more time for complex GHG rule plan development, but only have 1 to 3 years.

Reductions may have to be implemented before EPA approves plan.

Proposed Best System of Emission Reduction – 4 Building Blocks

BSER – 4 Building Blocks		
	Building Block	**Proposed Action**
Block 1	Improve coal plant heat rate	6% improvement from 2012 rates
Block 2	Re-dispatch generation from coal units to existing and "under construction" natural gas combined cycle units (NGCC)	Assumes all NGCC units run at 70% capacity factor from 2012 capacities
Block 3	Additional renewable and nuclear generation	15% for North Central region states (ND, SD, MN,…) 21% for West region states (MT, WY,…) (Percent of total electric generation in state, including renewable generation)
Block 4	Customer energy efficiency and demand response/reduction programs	1.5% annual incremental savings based on total electric sales

Individual State Targets – MDU Integrated System

State	2012 Emission Rate (lb CO2/ net MWhr)	2020-2029 Interim Target (lb CO2/ net MWhr)	2030 Final Target (lb CO@/ net MWhr)	% Final Goal Reduction from 2012 Emission Rate
ND	1,994	1,817	1,783	11%
MT	2,246	1,882	1,771	21%
SD	1,135	800	741	35%
MN	1,470	911	873	41%

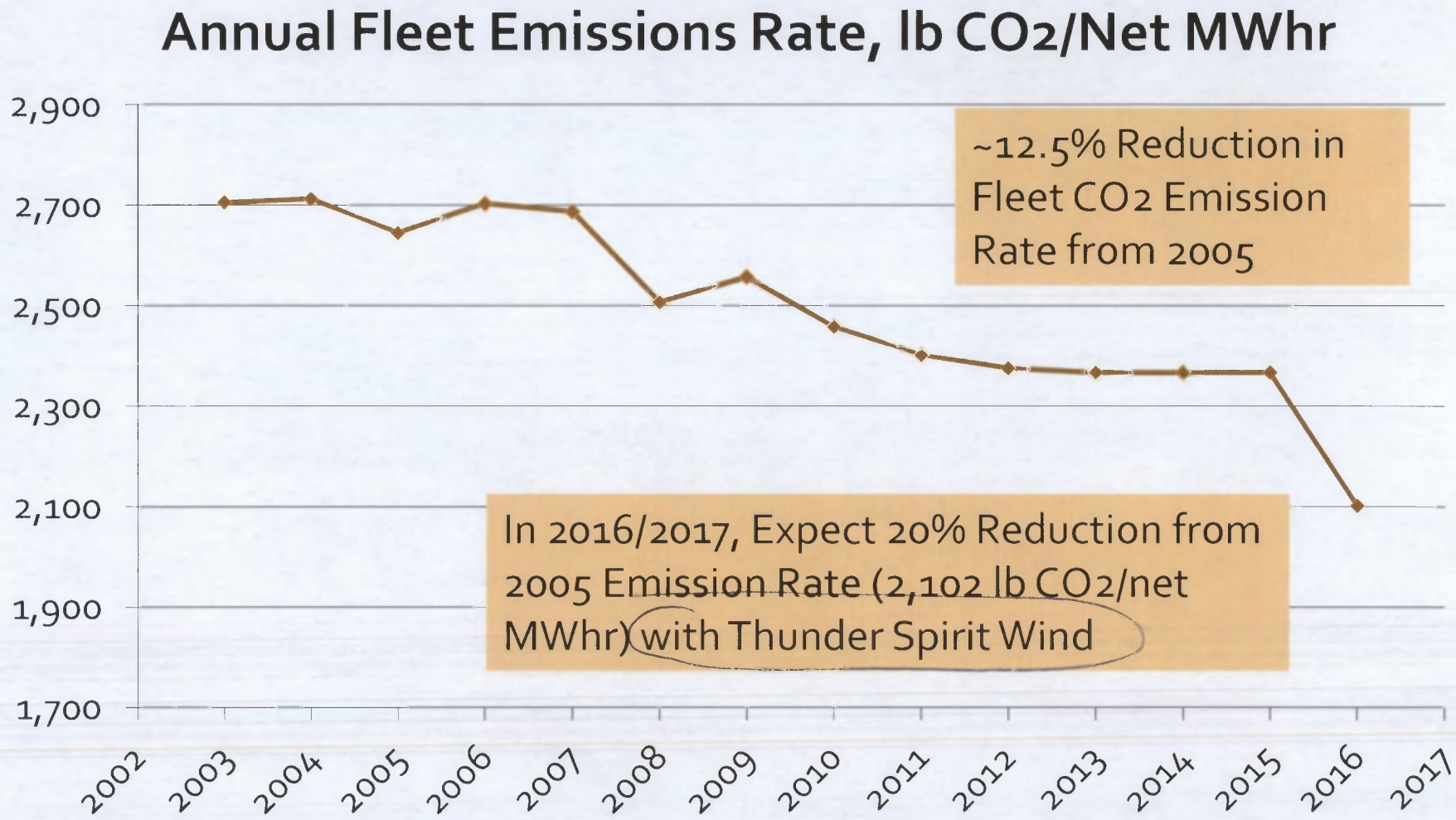
The percent reductions shown above do not represent mass reductions and should not be directly compared with the EPA's 30% mass emission reduction goal. This is shown to compare different state stringencies for reducing emissions.

Potential Generation Reduction/Replacement by Block

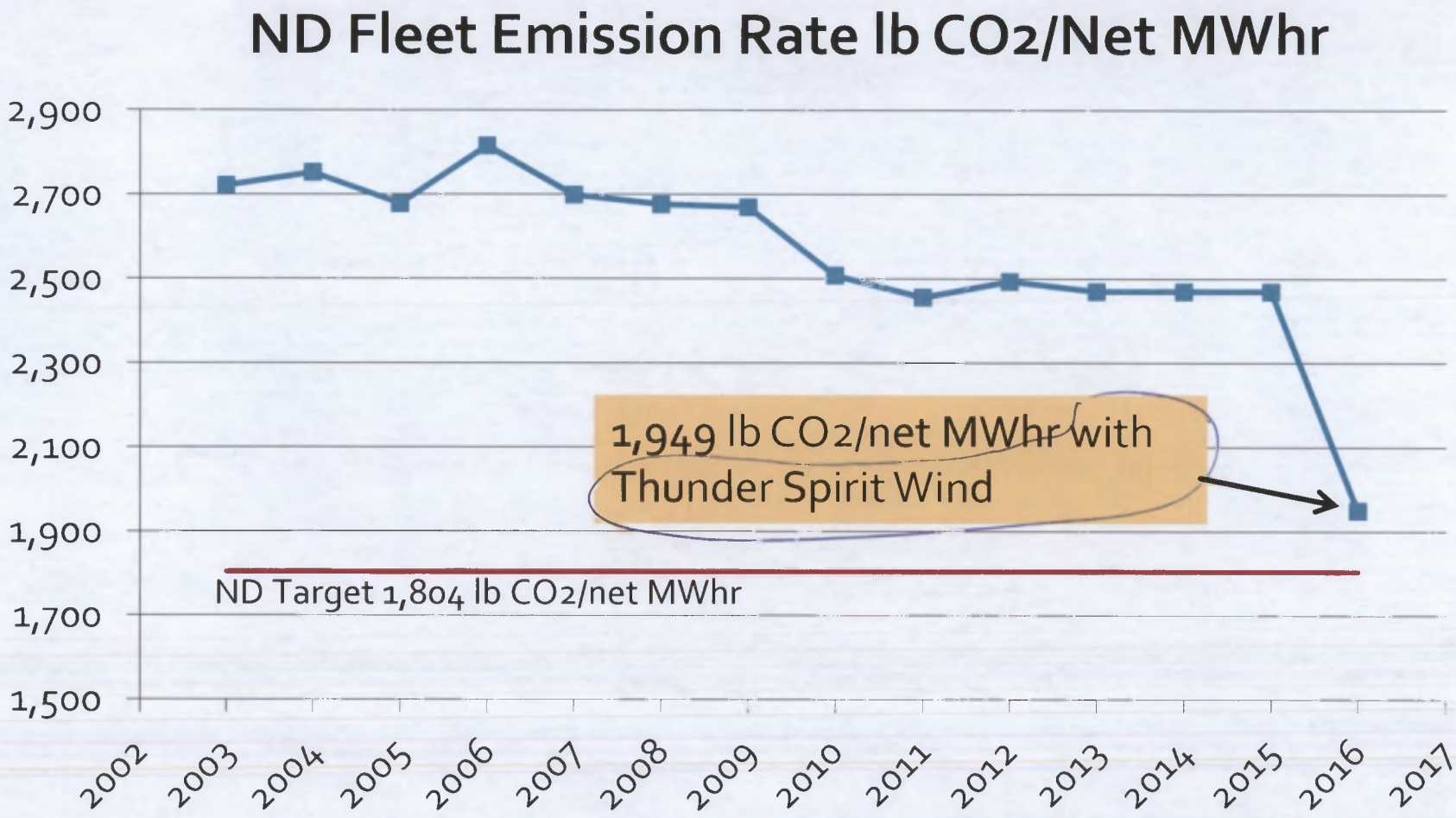
State	Block 1 MWhr Reductions	Block 2 MWhr Reductions	Block 3 MWhr Additional RE Generation	Block 4 EE MWhr per year Savings
ND	1,691,201	0	179,905	1,536,491
MT	866,844	0	1,460,954	1,624,321
SD	175,390	1,992,211	-1,095,816	1,028,768
MN	1,319,375	17,021,108	-1,565,326	7,095,830

*Negative numbers indicate an excess of renewable generation that is not required to be utilized for compliance in Block 3.

Montana-Dakota Fleet Average Emission Rate Reductions



Montana-Dakota ND Fleet Emission Rate



Other Compliance Options?

- EPA wants comment on other compliance options
  - Coal-fired unit conversion to natural-gas
  - CCS
  - New NGCC
  - Heat rate improvements at affected units other than coal-fired units

Block 1 – Coal Unit 6% Heat Rate Improvement

EQUIPMENT IMPROVEMENTS (2%):

- Economizer replacement
- Air preheater improvements
- Combined variable frequency drive and fan
- Turbine overhaul

O&M IMPROVEMENTS (4%):

- Turning off unneeded pumps at reduced load
- Installing digital control systems
- More frequent tuning of existing control systems
- Earlier like-kind replacement of worn components

Block 1 Issues

- Majority of projects already completed at Big Stone and Coyote
- Many projects completed at R.M. Heskett Station and Lewis & Clark Station – we are further evaluating

- Regional Haze pollution controls
  - Detrimental to heat rate at Big Stone Plant
  - SO_2 reduction project increases CO_2 emission rate at R.M. Heskett Unit 2, with minor impact to heat rate

- Overall Block 1 unachievable at 6% since most projects have been done and Regional Haze pollution controls are detrimental to heat rate

Block 2 – Re-Dispatch from Coal to Gas

- Assumes all existing NGCCs can be utilized at 70%
- EPA determined in 2012 that existing NGCCs averaged 40% capacity factor
- For NGCCs "under construction", EPA assumes 15% capacity re-dispatch
- If no NGCC in state, Block 2 is not in state target
  - Not applicable in ND or MT targets
- For SD, the majority of emissions reductions come from this building block

Block 2 Issues

- "Beyond the Fence"
- South Dakota target error must be corrected
  - One NGCC - Deer Creek was constructed in 2012 and began operation later in 2012, having a 1% capacity factor in 2012
  - EPA assumes 69% of Deer Creek capacity is re-dispatched to reduce generation at Big Stone Plant
  - Results in 23% capacity factor for Big Stone Plant – infeasible to run at low capacity factor
  - Potential stranded asset
  - Remaining useful life not considered as required under 111(d)
- Overall, Block 2 in SD is infeasible due to different plant ownership, no contractual obligations, unique individual resource needs, separate RTO's

Estimated SD Block 2 Impact Alone
Cost of Replacing Big Stone

Big Stone 111d Cost Impact - MDU
Forecasted Revenue Requirement

Estimated Net Book Value at 12/2020 (millions):

$28.5	Big Stone
71.0	AQCS
$99.5	Total Net Book

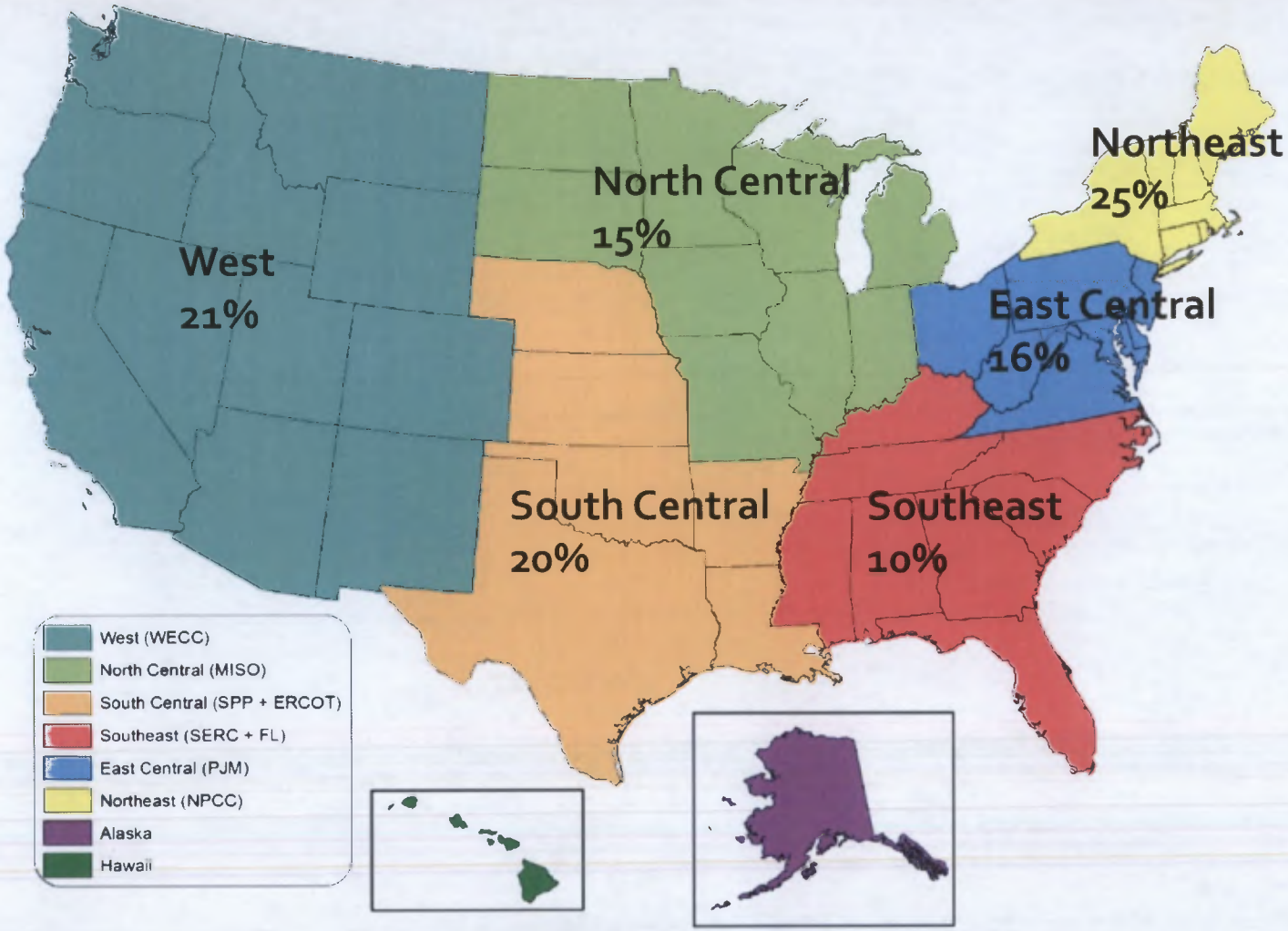
$19.9	Amortization of Net Book - 5 Yrs
16.2	Revenue requirement - replacement generation (Combined Cycle)
7.6	Incremental fuel cost (Combined Cycle vs. Big Stone)
$43.6	Total annual revenue requirement (millions)

10.1%	Percentage increase *

$122.52	Annual impact to an average customer (1,000 kwh/month)
$10.21	Monthly impact

* This increase is in addition to the approximate 15% increase associated with the AQCS project.

Block 3 – Additional Renewable Generation



Hawaii and Alaska 10%

Block 3 Issues

- "Beyond the Fence"
- As renewables increase, coal plant capacity factors are expected to decrease – impacting heat rate (Block 1)
- Share of Montana-Dakota's ND Cedar Hills Windfarm is used for MT RPS compliance
- Contradiction/confusion in EPA support documents with renewable generation in one state target, but the RECs can be claimed by another state having the RPS
- If renewable RECs go to other states, what does that mean for ND?
- Do current transmission system upgrades and locations coincide with EPA proposed renewable generation build out?

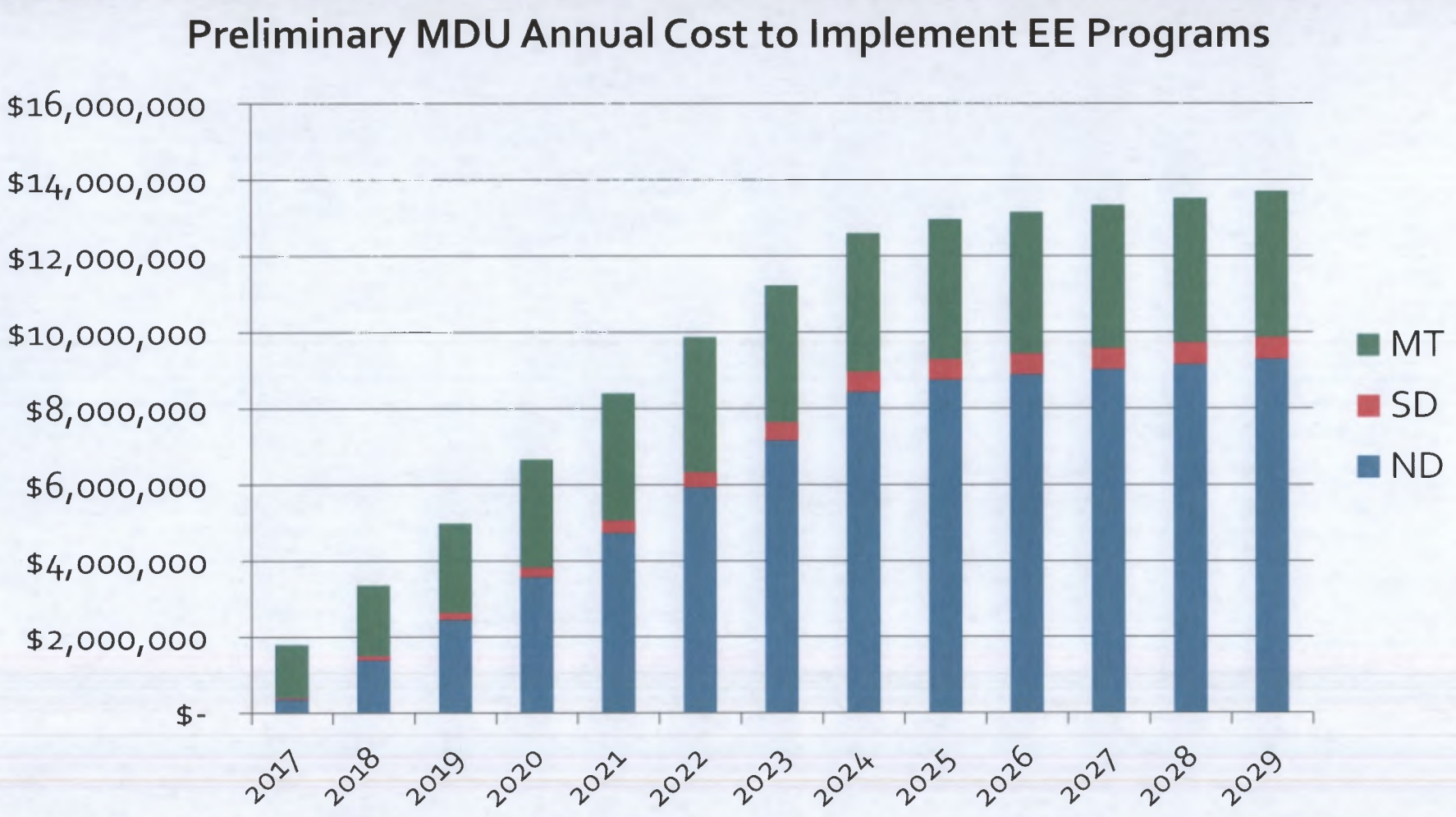
Block 4- Customer Energy Efficiency and Demand Response/Reduction Programs

- EPA assumes 1.5% annual energy savings
- Must conduct Evaluation, Measurement, and Verification (EM&V) to account for EE programs reductions
- If used for compliance, must be enforceable
  - Credited to specific coal plant using trading programs where EE is an offered type of credit (enforceable at unit)
  - State portfolio approach where EE enforceable directly in state plan
- Expect state rules/legislation are required to use credits for compliance

Block 4 Issues

- "Beyond the Fence"
- 1.5% annual EE target may be achievable, but there are costs
- Must remain cost effective over a long period
- Must have defined policies/legislation for enforceable reductions under CAA
- EM&V will need to be determined by state
  - EM&V cost of 5-10% of portfolio's annual budget is typical
  - Different state protocols for EM&V can present a challenge

Preliminary MDU EE Costs



Using $0.22 per kwhr and MDU 2013 IRP projected sales (assuming ACEEE low cost of $0.022/kwhr 10 year levelized)

American council for energy efficiency economy

Multi-State Compliance Program

- First, the errors in the blocks must be fixed
- Concern with infeasible targets not incentivizing regional approach. Liability concerns in partnering with states having very stringent targets?
- Transmission grid does not have state boundaries, therefore, Montana-Dakota believes a fleet-wide compliance option is the most efficient – could be a regional or multi-state approach

Summary of Montana-Dakota Concerns

- EPA must fix the building block errors first
  - Block 1 - 6% efficiency improvement is infeasible
  - Block 2 - Re-dispatch infeasibility
  - Block 3 – Contradictory language around state claims to renewable generation, and transmission needs
  - Block 4 – Target possibly too aggressive
- Timeline is too short for state plan development
- "Beyond the fence" legal issues exist
- Clean Air Act enforcement of Blocks 2, 3 and 4

Summary of Montana-Dakota Concerns (cont.)

- Interconnected block issues
  - ie. Block 2 (gas re-dispatch) Block 3 (RE) and Block 4 (EE savings) impacts to Block 1 (heat rate)
- Other options should be available for compliance
  - CCS, gas co-fire/fuel switch, new NGCC, non EGU reductions
- Fleet-wide compliance options are desired
  - Possible multi-state region program or portfolio approach
  - Will help our customers by utilizing efficiency of resources across multiple states