

South Dakota Public Utilities Commission

EPA's Section 111(d)

Energy Efficiency – Building Block 4

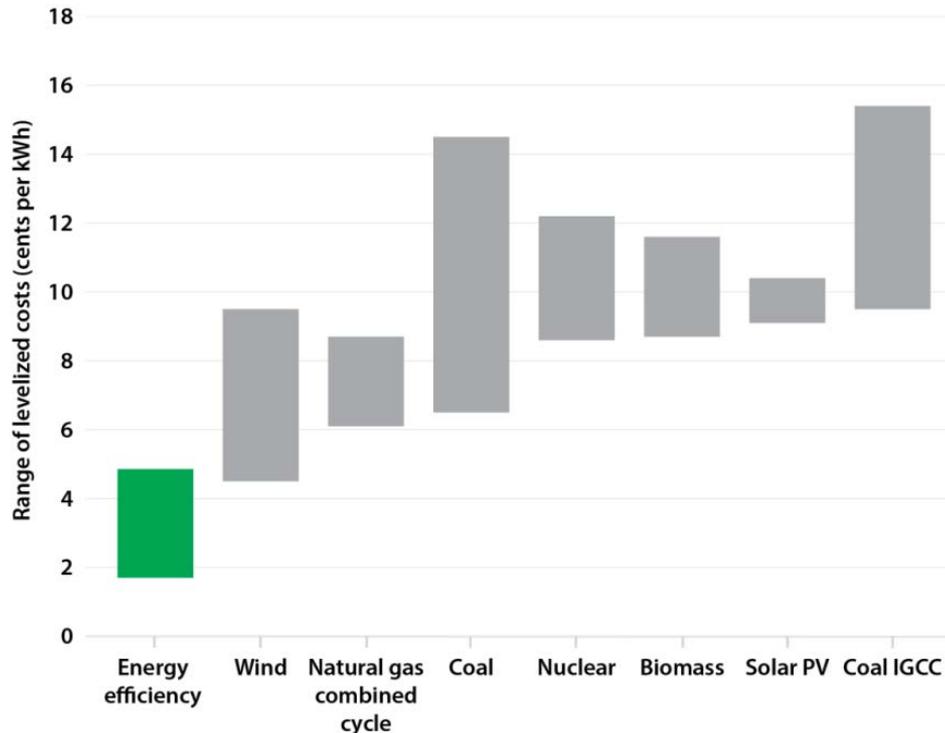
July 31, 2014

- Process EPA used to evaluate energy efficiency role in reducing GHG
- What is expected of utilities and state regulators
- What does it mean to South Dakota
- Next steps

Energy Efficiency/DSM

Building Block 4

- EE is a leading tool for achieving CO₂ reductions



Source: EE data represents results of ACEEE utility program cost (4 year average 2009-2012); supply costs from Lazard 2013

EPA used “best practice” scenario

- Estimate of potential
- Does not distinguish between policies in place and policies that would be required
- Represent a feasible policy scenario (not business as usual)
- Considers each state’s unique existing level of performance
- Allows time for each state to increase from current level
- Suggests savings pace of .21% per year across 10 states

How did EPA determine energy savings goals?



- Start year as 2017
- 2012 as the level of performance
 - Any improvement in EE between 2012-2017 will benefit a state in meeting its goals for the 2020-2029 interim compliance period
- Past performance and existing state EE resource standards
 - For several EERS clearly able to identify ramp up rate (10 states) = .21% each year
 - Used .2% per year and .15% per year (options 1 and 2)
 - Average measure life of 10.6 years
 - Approximate a distribution of measure lives among residential and C & I
- Determine sustainability
 - Once a state achieves best practices, level of performance remains constant through 2030
 - Could be at high levels for only 5 years...
 - For states above best practice, could sustain target for 13 years (2017-2030)

2012 reported savings compared to state policy

TABLE 5-8

2012 Reported State Levels of Incremental Annual Savings

Incremental Savings as % of Retail Sales	# of States	States
$\geq 1.5\%$	3	AZ, ME, VT
1.0% to 1.49%	8	CA, CT, IA, MI, MN, OR, PA, WI
0.5% to 0.99%	14	
$< 0.5\%$	25	

Source: EPA calculation based on EIA Form 861.

TABLE 5-9

Levels of Incremental Savings Required by State Policy on or before 2020

Incremental Savings as % of Retail Sales	# of States	States
$\geq 1.5\%$	11	AZ, CO, IL, IN, MA, MN, NY, OH, RI, VT, WA
1.0% to 1.49%	5	HI, IA, ME, MI, OR
0.5% to 0.99%	3	AR, CA, WI
$< 0.5\%$	1	TX

Source: ACEEE, 2014.

State policies can count, but the formula changes

- (1) Increasing the annual incremental savings rate to 2.0 percent and
- (2) the pace of improvement to 0.25 percent per year

additional electricity savings achievable from state policies not reflected in the 1.5 percent rate and the 0.20 percent per year pace of improvement, such as building energy codes and state appliance standards.

How did EPA calculate how much this would cost?

1. Levelized cost of saved energy - 1-6 cents/kwh
 - ACEEE – 1.3-5.6 cents/kWh; mean value of 2.8 cents/kWh
 - SD (OTP) – 2.58 cents/kwh
2. Econometrics, top-down modeling - large ranges
 - 2.5 – 14.6 cents
3. 1st year acquisition cost (inc. shareholder incentive and customer costs) to achieve .96% savings
 - EPA Estimate - 55 cents
 - SD (OTP) – 22 cents

What is EPA requirement in Measurement and Verification

- Plans must include an evaluation, measurement, and verification (EM&V) plan
- Specify the analytic methods, assumptions, and data sources that the state will employ
- Subject to EPA approval as part of a state plan
- EPA intends to develop guidance on acceptable EM&V methods and technical resources
 - Seeking comment
 - SD will want to weigh in on acceptable alternatives that work for SD

- ✓ Model Energy Efficiency Program Impact Evaluation Guide issued by the State and Local Energy Efficiency (SEE) Action Network;
- ✓ International Performance Measurement and Verification Protocol issued by the Efficiency Valuation Organization;
- ✓ ASHRAE Guideline 14-2002 Measurement of Energy and Demand Savings
- ✓ Superior Energy Performance Measurement and Verification Protocol for Industry;
- ✓ DOE Uniform Methods Project protocols;
- ✓ Technical Reference Manuals (TRMs) developed and/or adopted by states, utilities and regional bodies such as the Northwest Power and Conservation Council Regional Technical Forum (RTF) and the Northeast Energy Efficiency Partnerships (NEEP) EM&V Forum;
- ✓ Other SEE Action Network and regional products; and other modeling and/or statistical approaches.

M & V – What could work for SD

- Use an existing technical resource that is already the basis for reporting
 - Should work for most of the basic measures
- All utilities will need to quantify energy savings from all programs (muni's, coops, IOUs, alternative filings, energy services groups)
- “State” efforts will need documentation

State Plans, i.e. building codes, appliance standards

- “Development of appropriate quantification, monitoring, and verification protocols”
- EPA and federal partners to discuss EM&V protocols for such measures “in the coming years”
- Best handled on a statewide basis
- Difficult, but not impossible
- Should be included, but will take administration and reporting

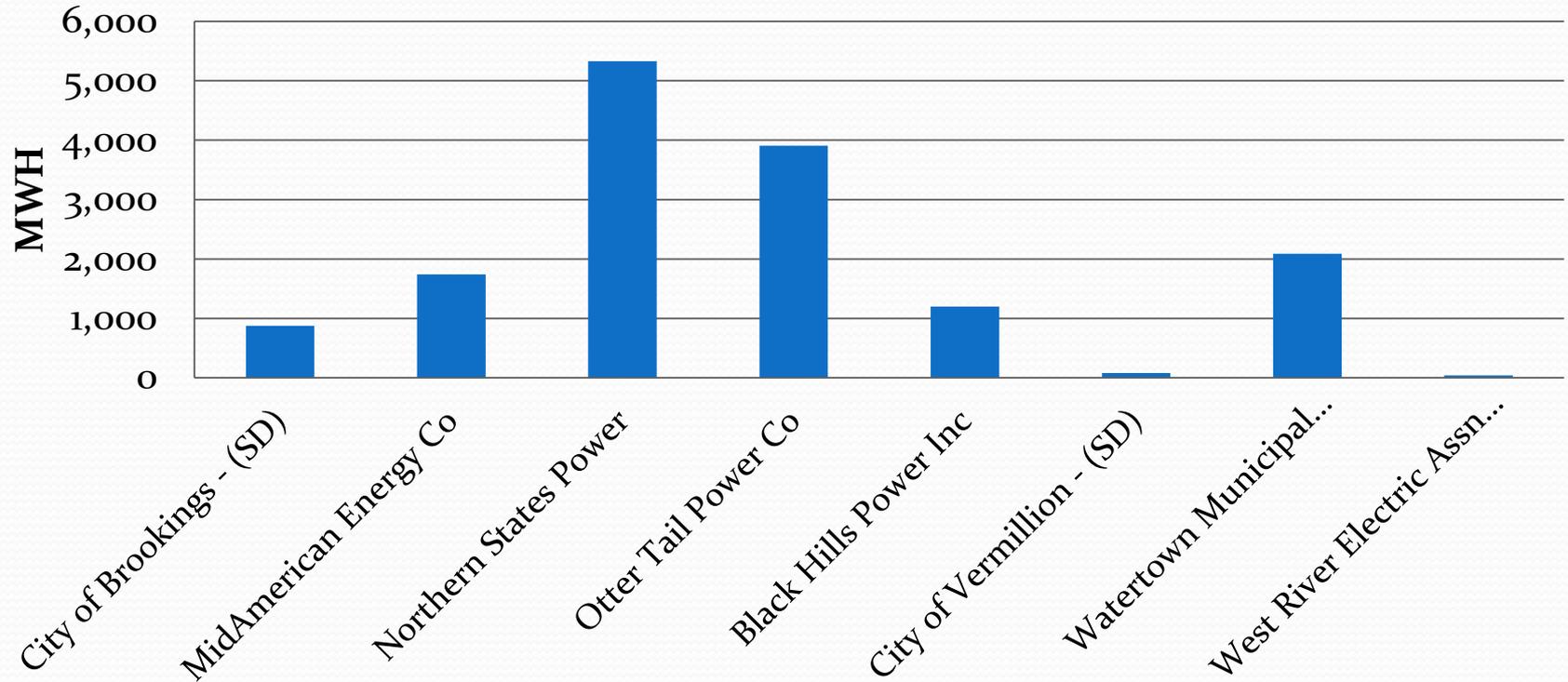
Reporting matters

- Reporting and record-keeping requirements for a state plan are necessary by all distribution utilities, vertically integrated, private or public 3rd parties, and state agencies
- May be different than those done for an EERS or RPS
 - EPA seeking comment on the examples and suitability of potential approaches

Bringing It Home

SD Utilities in EPA's 2012 Data

2012 SD MWH SAVINGS EIA 861



2012 Reported Electricity Savings

- MN = 1.12%
- ND = .07%
- SD = .13%
- Montana = .66%
- Iowa = 1.05%

- Vermont = 2.19%

Incremental Energy Savings Goals

2 Options

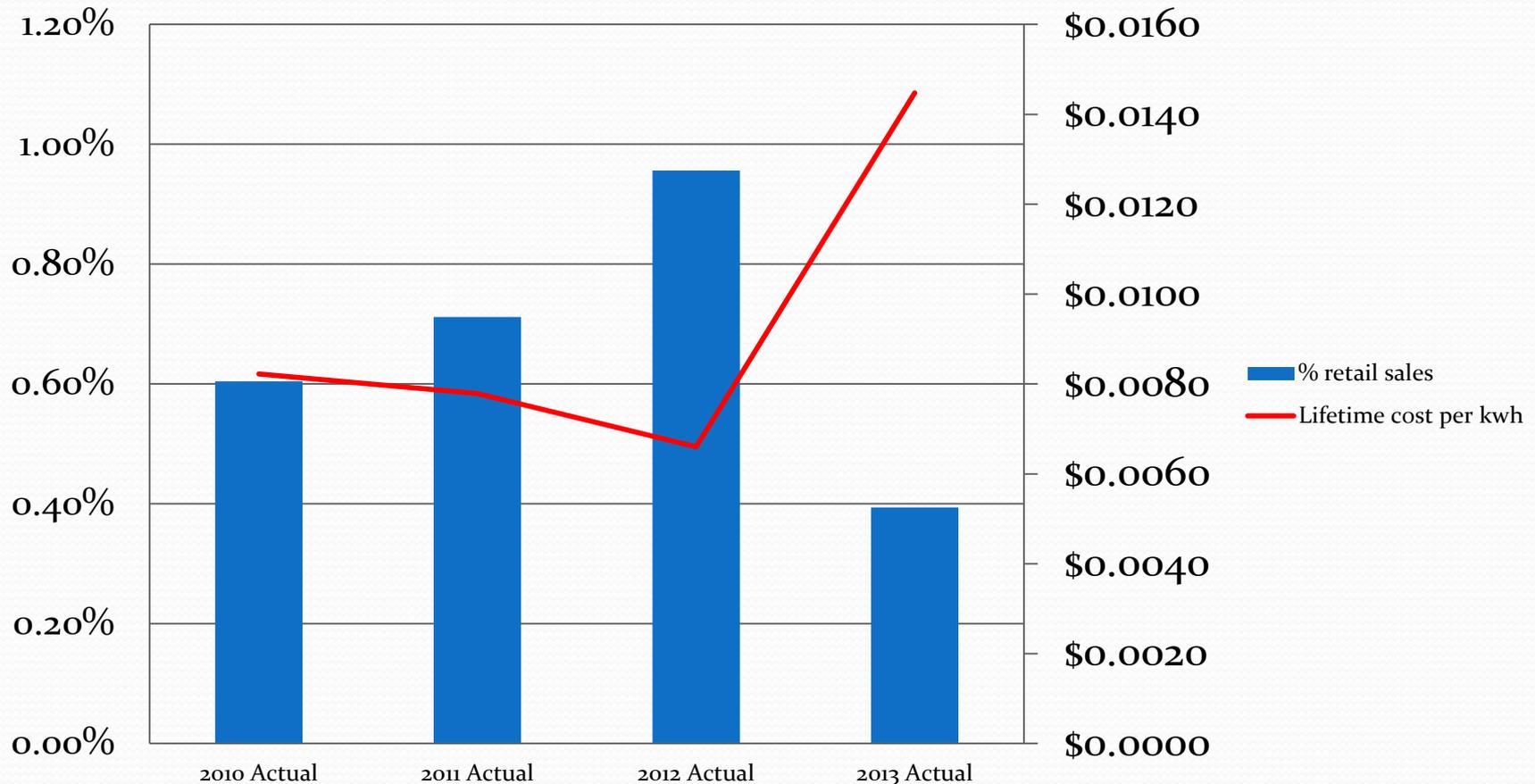
Option 1	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Minnesota	1.08%	1.28%	1.48%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
North Dakota	0.07%	0.27%	0.47%	0.67%	0.87%	1.07%	1.27%	1.47%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
South Dakota	0.13%	0.33%	0.53%	0.73%	0.93%	1.13%	1.33%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%



Option 2	2017	2018	2019	2020	2021	2022	2023	2024	2025
Minnesota	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
North Dakota	0.07%	0.22%	0.37%	0.52%	0.67%	0.82%	0.97%	1.00%	1.00%
South Dakota	0.13%	0.28%	0.43%	0.58%	0.73%	0.88%	1.00%	1.00%	1.00%

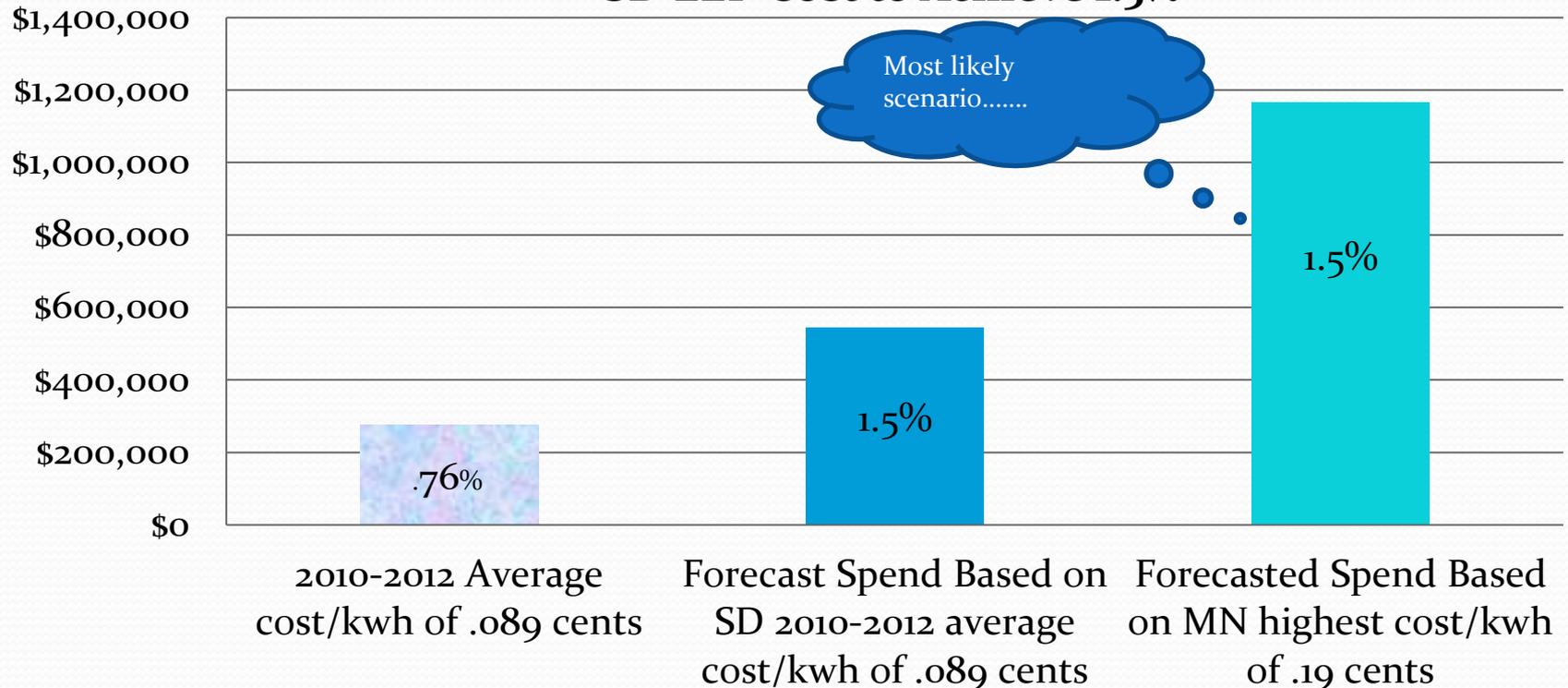


OTP SD Energy Savings & costs (% of retail sales in that year)



Is 1.5% EE Achievable by 2024 and at What Cost?

OTP's Estimated SD EEP Cost to Achieve 1.5%



Building Block 4 – Energy Efficiency

Summary

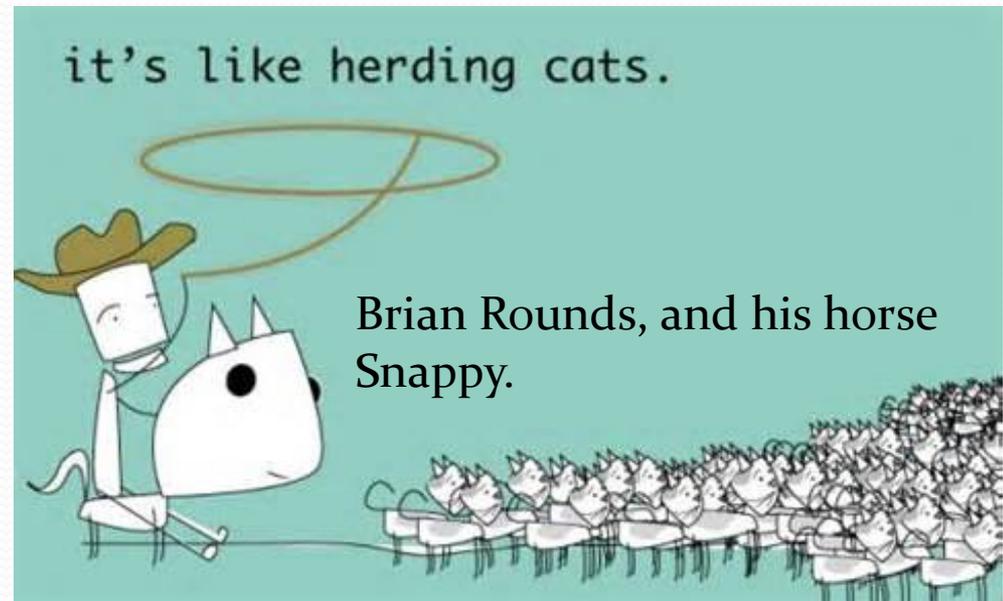
- Options to consider; EPA seeking comment
- Understandable methodology and approach to determining goals
- EE is a cost-effective resource

But....

- Aggressive goals, either at 1% or 1.5%.....2%
 - Reasonable to achieve Best Practice? Achievable?
- Goals will cost significant dollars and resources to achieve
 - How will national and regional economics impact such a long-range commitment
 - Utilities' and regulators' resources will be stressed

Other considerations

- Lots of people will want to come to the party.
- Not all of them will be well behaved.



Good news?

- South Dakota PUC is well-positioned to take efficiency to the next level.
- South Dakota utilities have a vast array of experience.
- To minimize cost while maximizing benefit, SD should capitalize on other states resources
 - Technical resource manuals
 - Measurement and verification
 - Setup to succeed

Recommendations on next steps

- Energy Efficiency Stakeholder Group
 - What can we live with?
 - How can we collaborate to achieve goals?
 - What can't we live with?
 - What resources do we have, know of, can get, to simplify this as much as possible
 - What recommendations do we have for the Commission on Building Block 4?



Questions?

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