

Boulder City Council Study Session
January 27, 2015



The Shifting Utility Landscape

Why are we here?

|

Doomsday Clock



The Climate-Energy Nexus

The climate problem is an energy problem...

Therefore, the climate solution is an energy solution

The Climate-Energy Nexus

Decentralize
Democratize
Decarbonize



Agenda

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..... The Changing Energy Utility Landscape

II

..... Case Studies

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..... The Minneapolis Franchise and MOU

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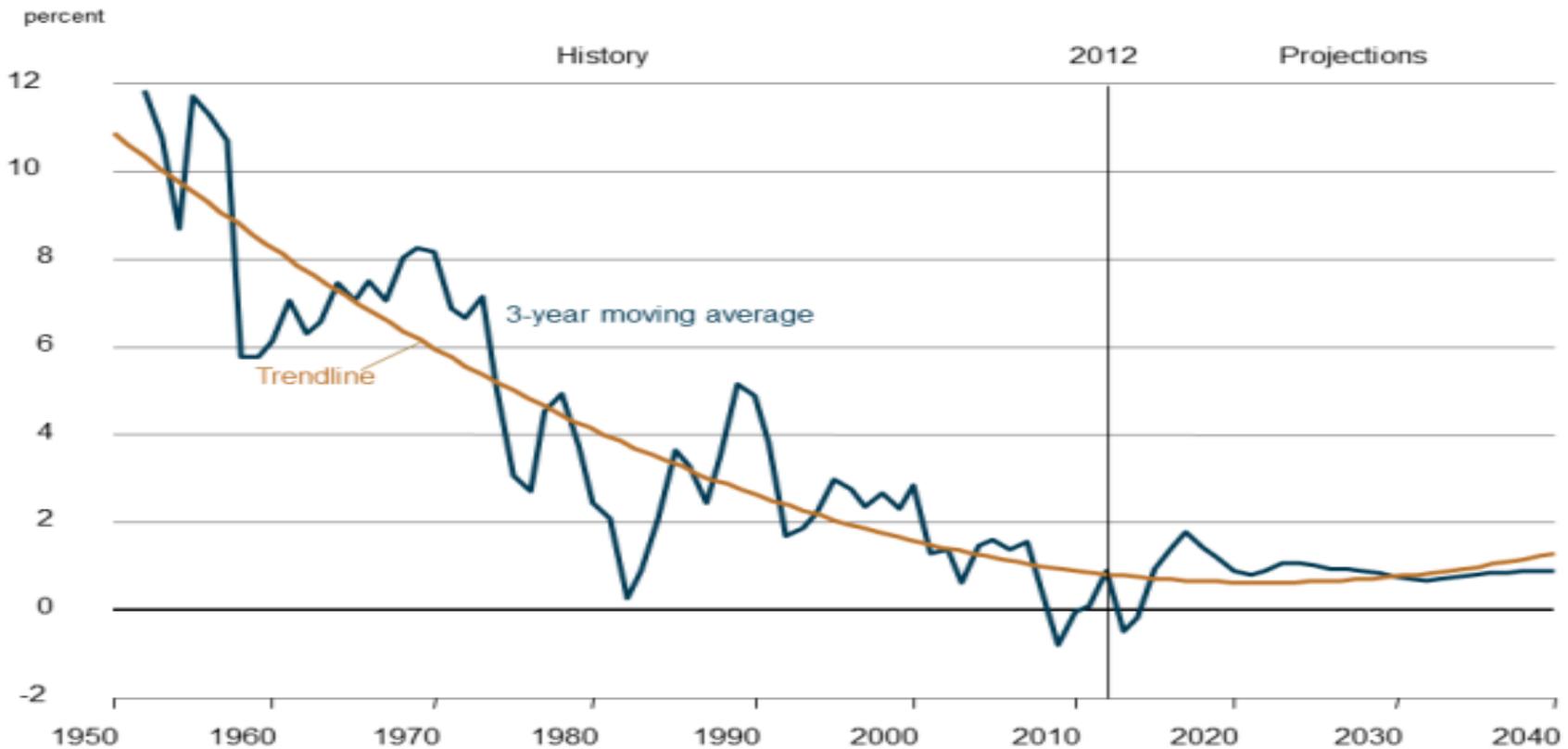
..... Next Steps

V

..... Council Questions and Discussion

Pressures on the Existing Utility Business Model

- New environmental regulations
- Declining or flat load growth projections



Pressures on the Existing Utility Business Model

- New environmental regulations
- Declining or flat load growth projections
- Shifting fuel economics
- Dramatically falling costs of renewable resources
- Aging distribution resources
- Antiquated revenue model
- Increasing customer expectations



Pressures on the Existing Utility Business Model

“I expect my energy provider to give me **simple, easy-to-use choices.**”

“I’d like a simple **‘bundle of services’** that saves me time and money!”

“I prefer the **convenience of self-serve** for nearly all my needs.”

“I would pay more to have my power come from **renewables.**”

“Why can’t my provider be innovative and offer me **new technologies** for my **whole family?**”

“Why can’t my provider **proactively** tell me about **specific opportunities** to reduce my bill?”



“I would like my provider to offer me **bundled Home Energy Solutions**”

“I want my provider to offer **seamless solar options.**”

“I rarely talk to my provider and would prefer **web only service** if I could get a discount.”

So what are we doing today?



- Boulder Community Power Partnership
- Boulder Energy Challenge
- Solar capacity study with NREL
- Working groups (energy services, resources)
- Community visioning
- USDN grants for microgrids, district heating & visioning



BOULDER ENERGY CHALLENGE

Community Power Partnership



Be informed.
Track your resource use.
Contribute to innovative community solutions.

Case Study – New York



“In one of the most promising moves in the energy sector in years, New York State is proposing a way to get a head start on, and perhaps help lead, a revolution in the world of electricity generation.”

New York Times, “Smarter Electricity in New York” May 13, 2014

“New York Prodding Utilities to Shift From Monopoly Model... The move would spur generation from thousands of smaller systems owned by individuals and other companies -- notably rooftop solar panels.”

Bloomberg, May 12, 2014

Case Study – New York

- Give customers more choice, control, and value in their energy usage for each dollar spent
- Incentivize utilities to focus on system and capital efficiency
- Align energy policies and the use of ratepayer funds to animate private markets and scale deployment
- Provide a bridge to a self-sustaining, private sector-driven clean energy markets

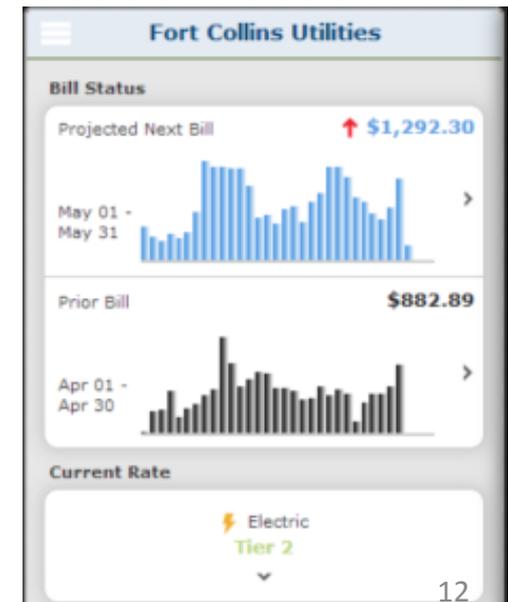
New York envisions a **flexible and clean** energy system that empowers communities and customers to receive the **reliability and affordability** they value.

Case Study – Fort Collins, Colorado



Energy Engage Mobile

- First utility to provide Energy Engage Mobile to meet energy efficiency and customer satisfaction goals.
- With detailed usage and pricing data, customers will better understand their consumption and be empowered to make better energy and water usage decisions.



Case Study - Chattanooga, Tennessee



- Fiber-optic network as test bed for Electric Vehicles
- Customer choice in pricing - TOU rates expected to result in savings of \$22.3M for C & I
- Some business customers are able to forego redundant feeds
- Grid is likely to provide the city \$300M in economic benefits over 10 years
- Invited entrepreneurs to access data and implement new strategies and programs



Minneapolis's Clean Energy Goals:

- Reliable and Affordable Energy Services
- Clean Energy
- Essential Energy Services for All
- Local Resources
- Market Integration of Efficiency
- Collaborative Progress

MINNEAPOLIS ENERGY PATHWAYS, A FRAMEWORK FOR LOCAL ENERGY ACTION

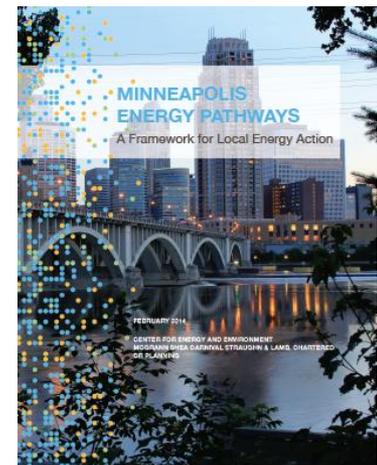
Pathways to Energy Goals

1. Enhanced Franchise Agreement
2. City-Utility Partnership
3. Community Choice Aggregation
4. Municipalization

MINNEAPOLIS ENERGY PATHWAYS, A FRAMEWORK FOR LOCAL ENERGY ACTION

Recommendations:

1. Execute an enhanced franchise agreement with shorter term
2. Enter into a separate “Clean Energy Agreement.”
3. Use this partnership to leverage statewide policies.
4. Engage in state energy policymaking.
5. Continue to pursue options for local control.



Minneapolis Franchise

Minneapolis “Enhanced” Franchise Agreement	An Improvement for Boulder?
Condemnation cost includes 10 years of lost profit	No such requirement in Colorado
“Enhanced” franchise with: <ul style="list-style-type: none">- Audit rights- Annual meeting to discuss performance and infrastructure planning	Already included in Xcel Energy’s standard franchise agreement
Ten year term with option for two five-year extensions	Yes. Xcel Energy would not agree to shorter term with Boulder in 2010.

MEMORANDUM OF UNDERSTANDING

- Created Board of equal number of utility and city officials
- Meets at least quarterly
- Future action may be subject to approval by MPUC
- MOU terminates automatically with Franchise
- MOU may be terminated by a party on 60-days written notice
- Minneapolis responsible for program costs and incentives beyond scope of programs offered to all Xcel Energy customers

Minneapolis Franchise

III

Minneapolis MOU	Boulder Negotiations
Identify ways to reach goals	City staff identified pathways to goals in December 2012 White Paper
Board	Boulder Xcel Energy Task Force
Quarterly meetings	Monthly meetings : 2013-2014

So what do these examples mean for Boulder?



- Many of these examples are not possible in Boulder or Colorado
- Colorado may not be positioned to support increasingly progressive practices

So what *can* we do?

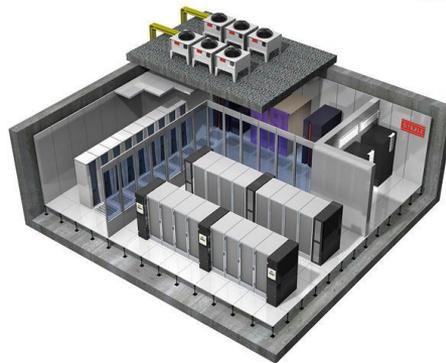
Focus on projects that create immediate short-term benefits and learning opportunities

- Pilots
- Behind-the-meter
- Analyses and studies (local generation analysis)
- Ability to “scale up”
- Projects that offer multiple benefits

So what do these examples mean for Boulder?



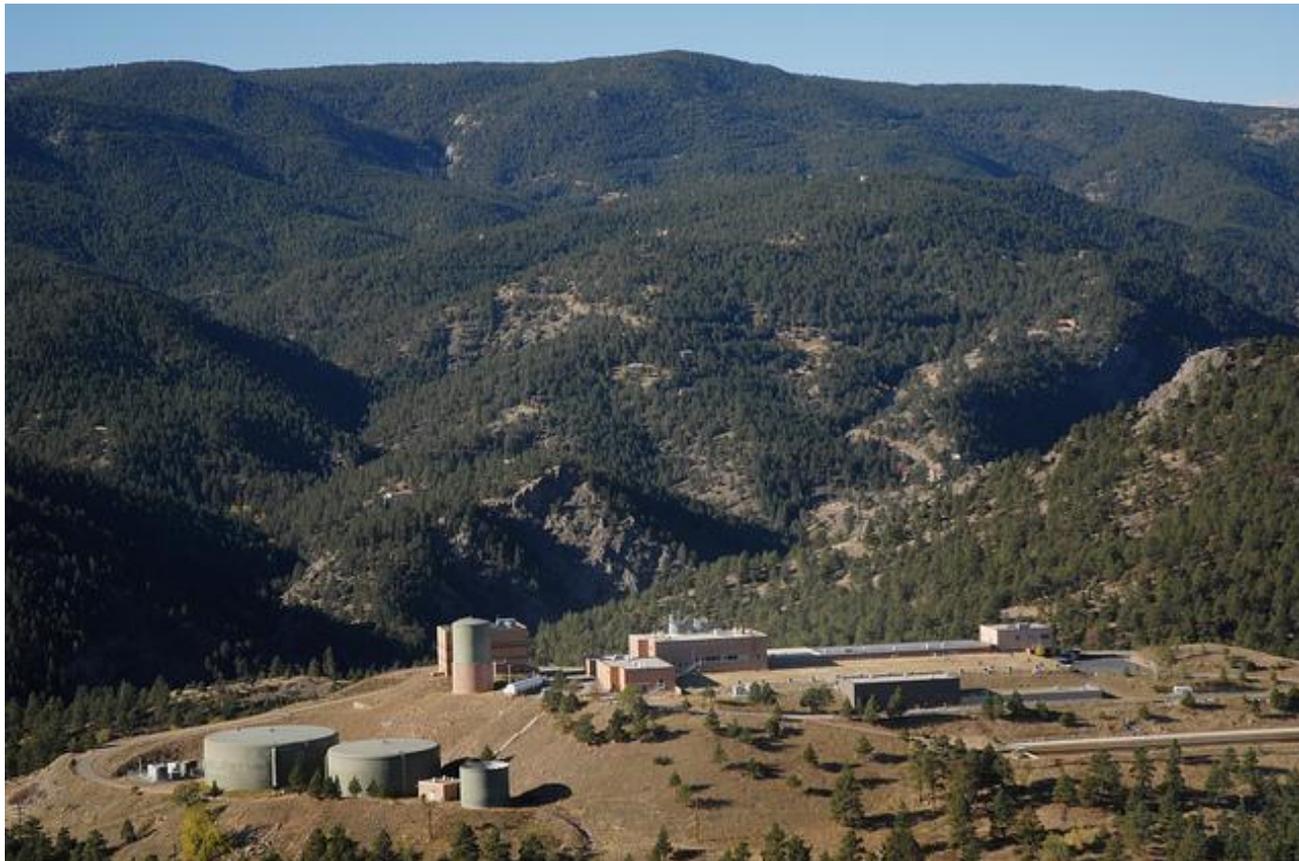
Microgrid at critical sites to improve power quality, increase resilience and reduce energy consumption



So what do these examples mean for Boulder?



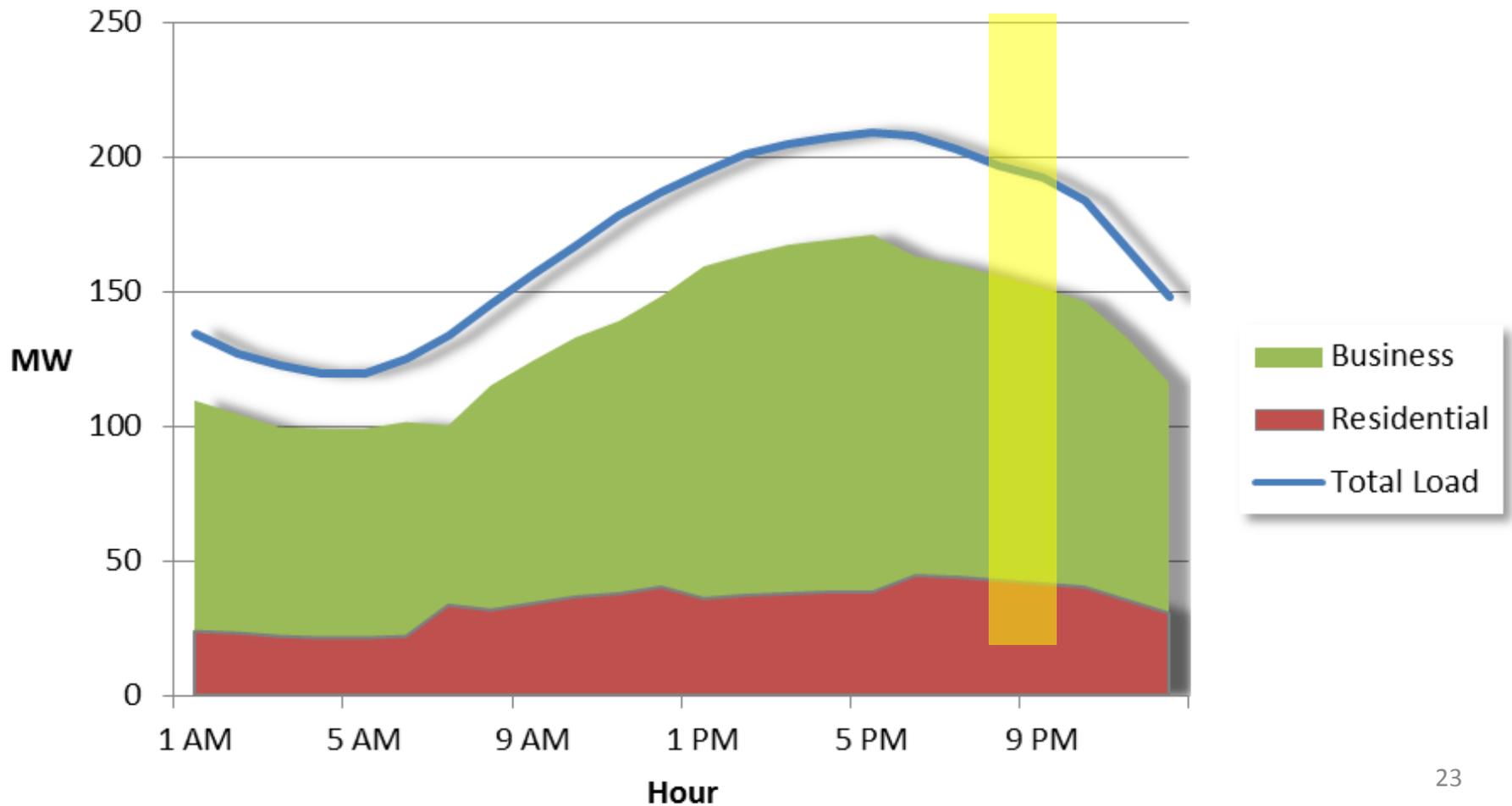
Implement microgrid at Betasso water treatment plant to increase resilience and reduce energy consumption



So what do these examples mean for Boulder?



Solar to reduce peak demand



Broadband: Expanded Choices Expanded Control



What

- Our expansive fiber network
- Local economic development
- Local business sustainability
- What is the future of our community?
- Sustainability
- Leverage these extraordinary



but
use
electrically

public

- Our expansive fiber network is a key to how public-private cooperation can work
- Our future community sustainability will benefit from leveraging these extraordinary



Drivers of digital choice and local control: “The 3 C’s”

- Competition
- Connectivity
- Capacity



Competition

- Current landscape = digital oligarchy, waning technology
- City fiber infrastructure = ↓ cost of capital
 - “We’re not called ‘Boulder’ for nothing”
 - Fiber is the future
- Ability to apply multiple business models
 - Cost competitive, scalable technologies



DEMAND



SUPPLY



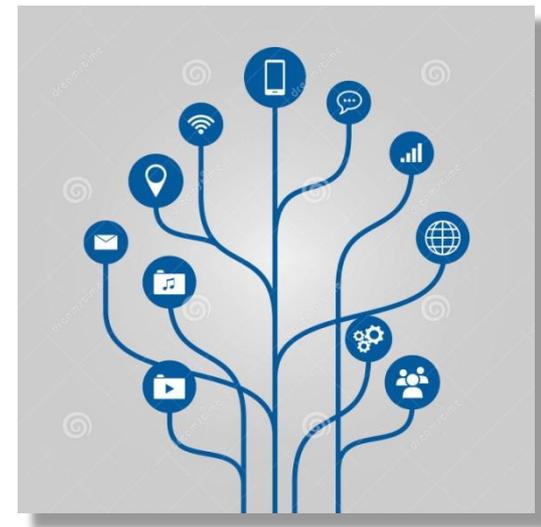
INSTITUTIONS



INNOVATION

Connectivity

- Fiber-to-the-Premises (FTTP) as an imperative
- Increasing importance of mobility
- “The Internet of Things”
- Digital awareness – systems control and monitoring
- The community as a virtual and physical network
- ↑ Reliability



Broadband: Expanded Choices Expanded Control



Capacity

- Converged (data, voice and video) content
 - Increasing digital “PSI”
- The emergence of “Big Data”
 - Data is the “fuel” of intelligent systems, solid analytics and good decisions
- Must be synchronous (“pull” and “push”)
- The necessity of a fiber infrastructure



Broadband: Expanded Choices Expanded Control



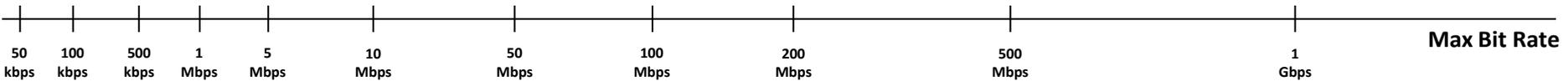
Capacity and Broadband Technologies



Wireline Technology



	Technology at a mature state of deployment
	Technology deployed in select markets
	Technology at conceptual or development state or early stage of deployment



Wireless Technology



Broadband: Expanded Choices Expanded Control



Bridging the Broader Digital Divide

- Economic vitality
 - Key factor in growth and retention
- Education
 - Learning center connectivity; eLearning and remote education; reduced socio-economic barriers
- Healthcare & Telemedicine
 - Medical monitoring and telemedicine; digital records
- Government needs
 - Intergovernmental connectivity; secure public safety and utility digital communications



Broadband: Expanded Choices Expanded Control



Bridging the Broader Digital Divide

Environmental sustainability, clean energy benefits of broadband (greenhouse gas reduction over 10 years)

- B2B and B2C e-commerce: ↓ 206.3m tons
- Teleworking: ↓ 588.2m tons
- Teleconferencing: ↓ 199.8m tons
- Mail, plastic media, etc: ↓ 67.2m tons

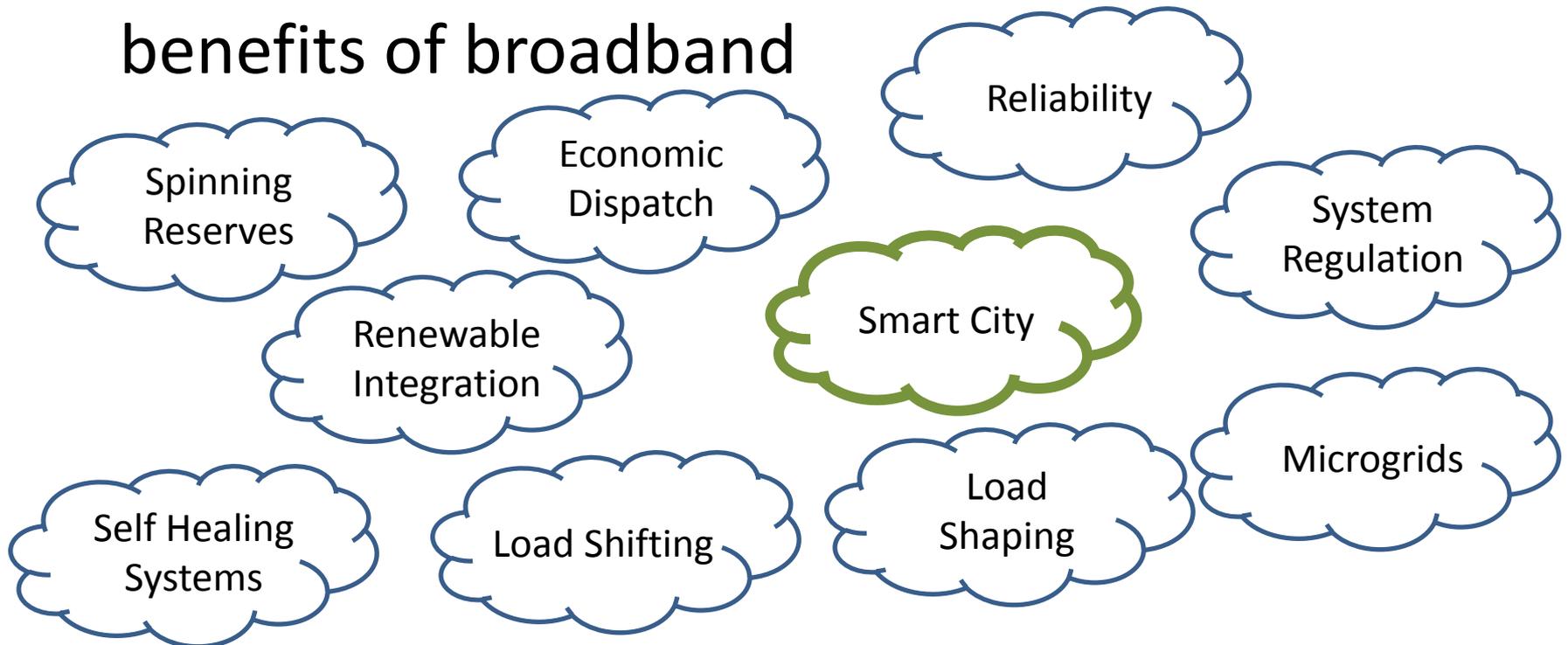
(Source: Benton Foundation)

↓ 1 billion tons



Bridging the Broader Digital Divide

Environmental sustainability, clean energy
benefits of broadband



All empowered by broadband...

Immediate next steps

- Form Community Broadband Working Group
 - Multiple ‘communities of interest’ represented
 - Help guide the initial vision for Boulder’s “smart city” broadband future
 - Assist with public participation, communication strategies
 - Help define next steps



Broadband: Expanded Choices Expanded Control

Immediate next steps (cont.)

- Conduct feasibility study
 - Fiber engineering analysis
 - Current and future applications; Energy Future needs
 - Analyze alternative business models, risks and costs
 - Advisory role for Broadband Working Group



Immediate next steps (cont.)

- Civic Center Public Wi-Fi project
 - Immediately leverages our legislative exemption
 - Benefits to Civic Area project
 - Case study for benefits of mobility and expanded digital access



Broadband: Expanded Choices Expanded Control



Closing...

- Passage of 2C can release our full capacity to vision and implement a truly resilient, Smart City
- Example of Chattanooga fiber and electric vehicle test bed: growing nexus of broadband and energy
- Analogy to control over poles and wires
- Ability to build a great future using infrastructure we own and control



Next Steps

- Second community visioning session
- Energy Services Working Group recommendations
- Evaluate innovative grant opportunities and partnerships to develop pilots
 - Microgrids
 - “Behind-the-meter” strategies
- Complete Solar Capacity Analysis (Spring 2015)
- Ongoing support of existing pilots and programs
- Explore legislative options

Questions for Council

1. Are there questions or additional information about the changing electric industry and trends that council would like staff to provide/research?
2. Are there actions or next steps council would like us to pursue?
3. Does Council have questions concerning the Xcel-Minneapolis franchise or MOU?