

**CLEAN  
LOCAL  
ENERGY**

reliable  
low-cost  
possible

[BoulderEnergyFuture.com](http://BoulderEnergyFuture.com)



## **Boulder's Municipalization Exploration Project**

City Council Study Session: July 23, 2013

# Agenda

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1. Updates to modeling, risk mitigation
2. Qualitative analysis
3. Governance Working Group recommendations
4. City/Xcel Energy (Xcel) Task Force & Xcel proposal
5. Separation and acquisition
6. Next steps

# Questions for Council

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1. Is there sufficient information to move forward with acquisition of Xcel's electric system assets through negotiation and/or condemnation?
2. How does council want staff to proceed with discussions about Xcel's proposal?

# PART 1:

## Key Takeaways

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- Charter metrics can be met, with some reduction in cost savings compared to previous analysis
- The modeling was intentionally stress-tested:
  - This is why the results focus on lower levels of stranded and acquisition costs
- Risks can be managed

# PART 1:

## Modeling Updates

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- Better information about Xcel's costs
- More current resource prices
- Additional options
- Community input

# PART 1:

## Modeling Debt

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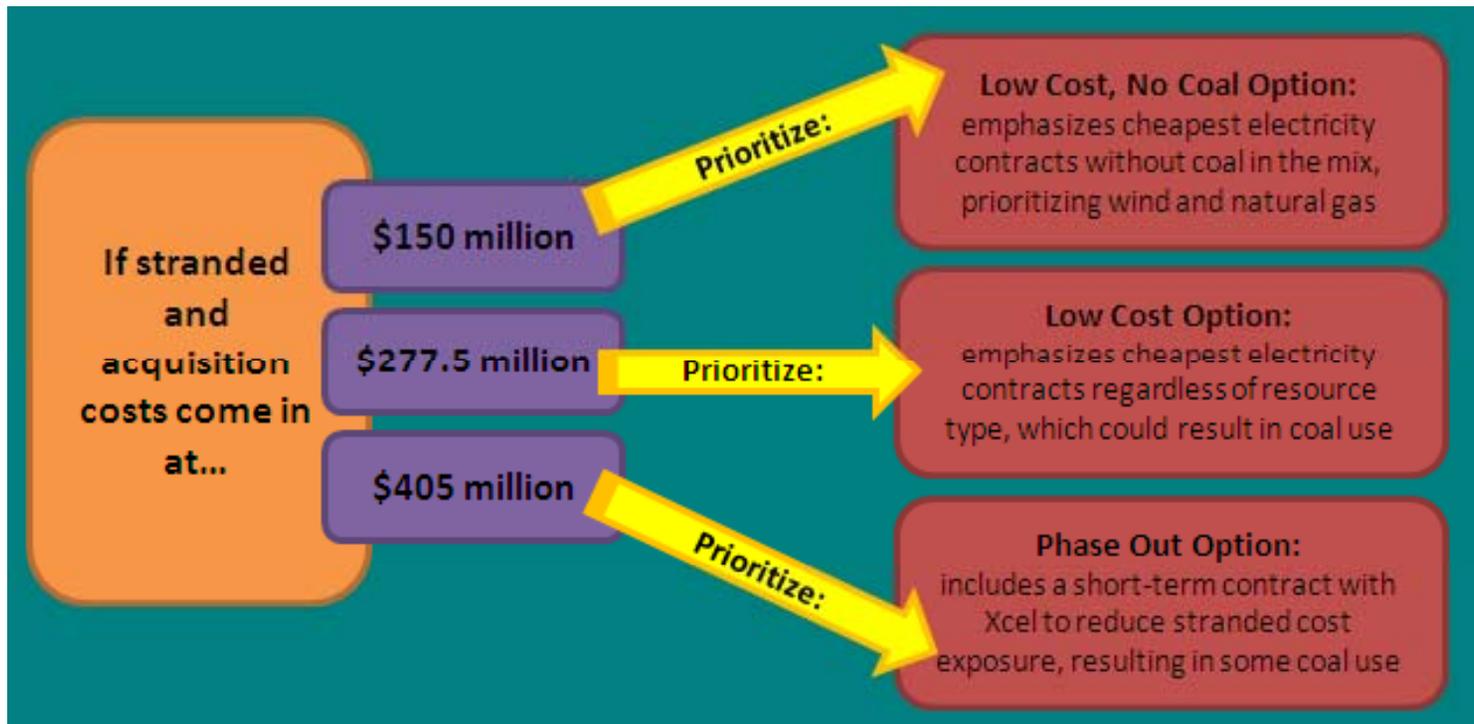
- Four levels of stranded and acquisition costs:
  - \$150, \$214, \$278, \$405 million
- Focused modeling on \$150 and \$214 million:
  - These lower levels can be borne by the utility
  - Higher levels could be mitigated through a power purchase agreement with Xcel

# PART 1:

## Using the Options



- Illustrative options:
  - Low Cost
  - Low Cost (50% Wind)
  - No Coal
  - Local Generation



# PART 1:

## Did You Know?



- Without **Carbon Pricing** the metrics can still be met
- Without **Wind Subsidies** the metrics can still be met:
  - Working groups did not expect current PTC would exist by 2017
  - Increases median wind price, but adjusts for technological advances

# PART 1:

## Did You Know?



- **Capitalized Interest** is a common financial practice:
  - Without capitalized interest, costs are lowered over the long term
  - Capitalized interest improves financial stability by building cash reserves
- **Out-of-City Customers** represent <3% of projected revenues

# PART 1:

## Did You Know?



- Model assumes more **Energy Efficiency Rebates & Incentives** than Xcel:
  - Historically, Boulder customers received \$1.7M-\$2.3M/year in rebates
  - Models include \$3M per year
- **Solar Incentives** are included in all the options at \$3.5-\$7M/year:
  - Xcel: Boulder customers receive 14% of Solar\* Rewards
  - Believed to meet or exceed amount from Xcel in 2012

# PART 1:

## Did You Know?



- In 2005, **Acquisition Costs** were estimated at \$93-\$123M (R.W. Beck)
- In 2011, **Acquisition Costs** provided by Xcel were \$150M
- In 2013, Modeling assumes:
  - **Stranded Costs:** \$0-\$255M in quartiles (Xcel's number)
  - **Acquisition Costs:** \$150M (Xcel's number)
  - **Total Costs:** \$150-\$405M

# Part 1: Did You Know?

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All of the city's modeled data and assumptions  
can be found at:

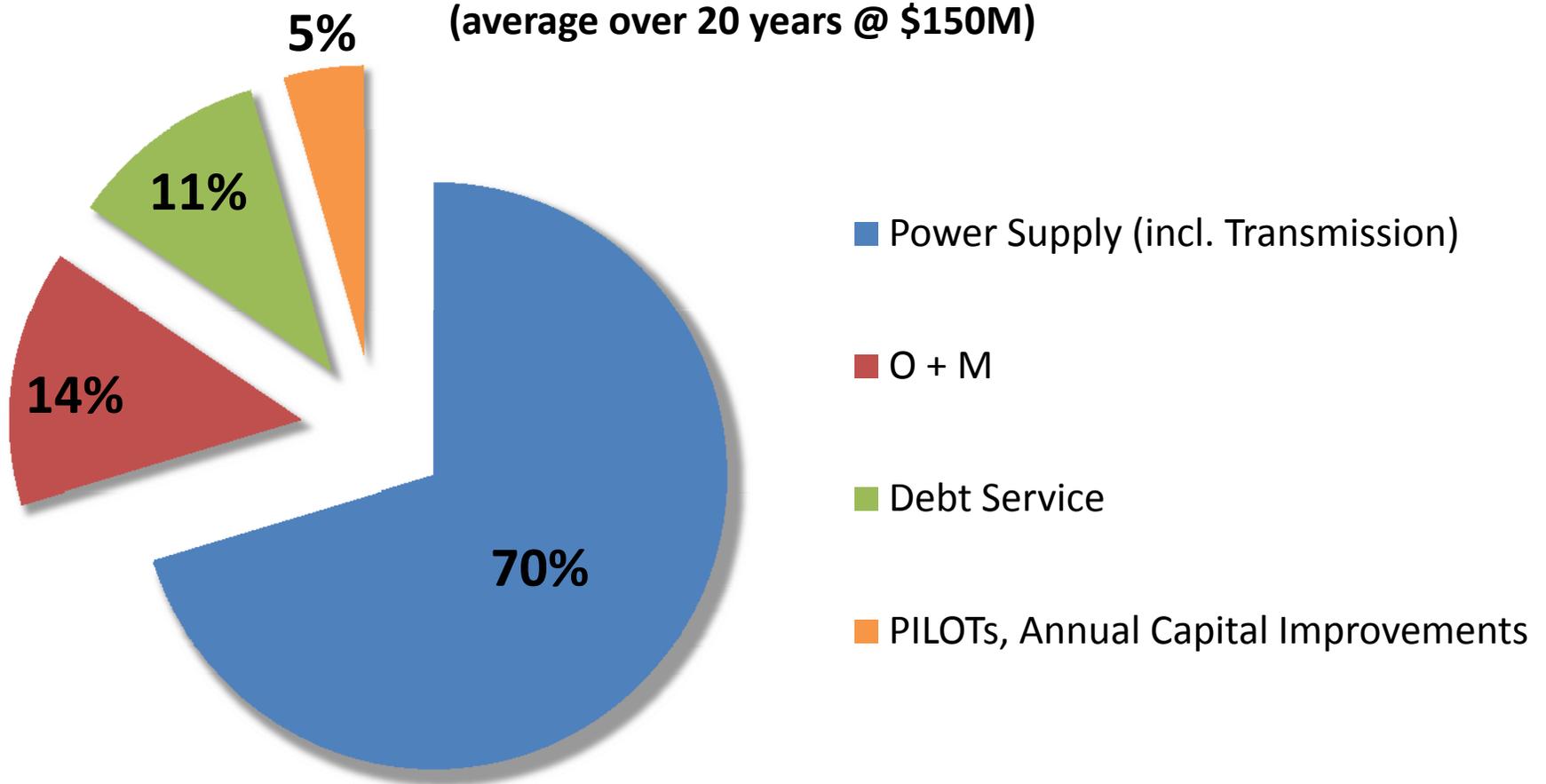
[www.BoulderEnergyFuture.com](http://www.BoulderEnergyFuture.com)

# PART 1:

## Distribution of Costs



Proportion of Local Utility Costs  
(average over 20 years @ \$150M)

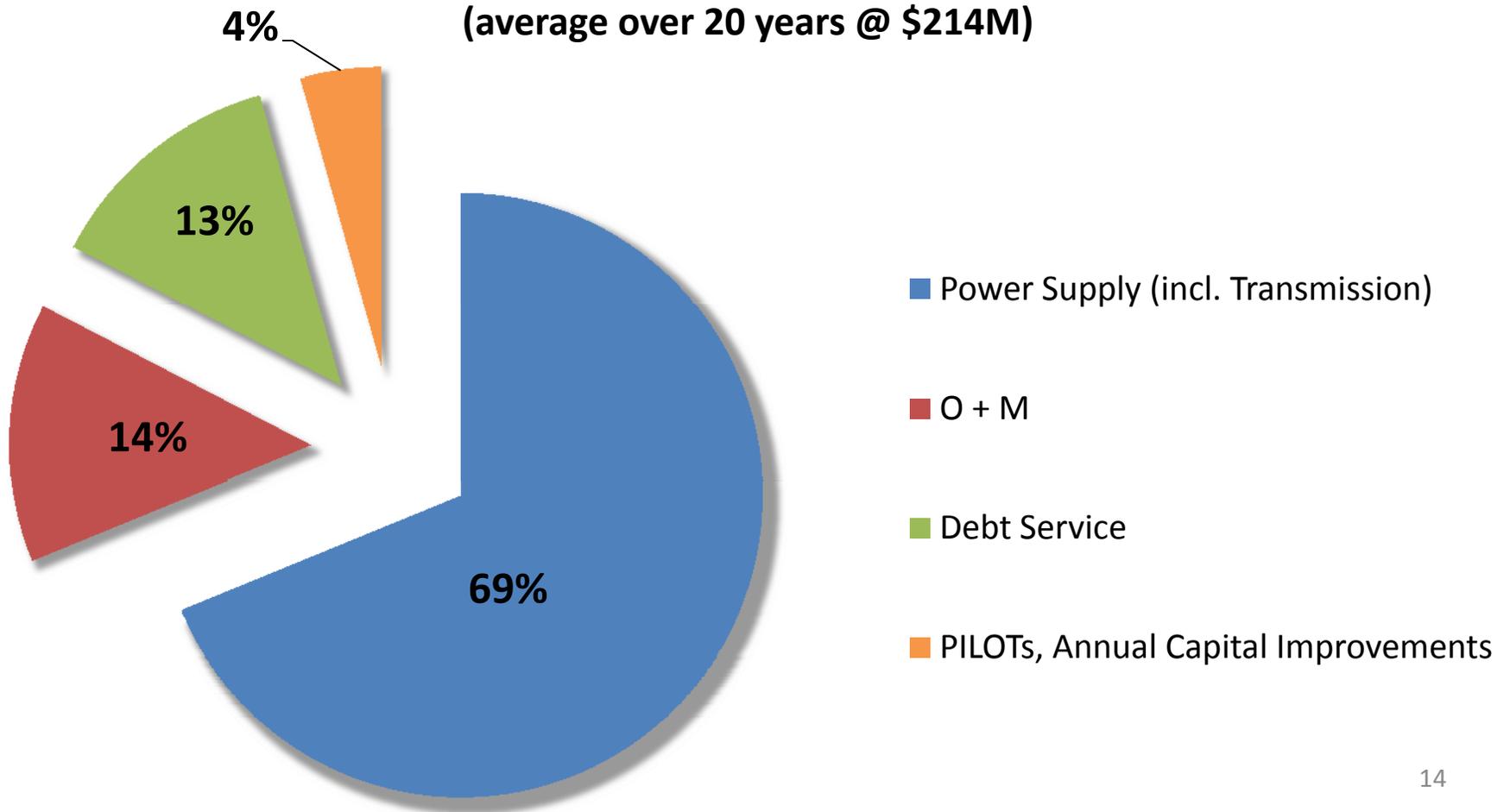


# PART 1:

## Distribution of Costs

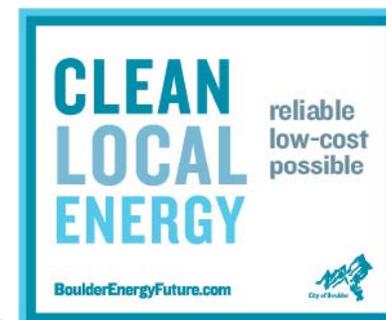


Proportion of Local Utility Costs  
(average over 20 years @ \$214M)



# PART 1:

## Financial Results



\$150 million in stranded and acquisition costs (CENTS PER kWh)

	Xcel Baseline	Low Cost	Low Cost (50% Wind)	No Coal	Local Generation
2017 (Day 1)	11.24	9.05	9.45	10.17	9.64
20 Year Avg	15.25	14.43	14.63	15.62	14.82

\$214 million in stranded and acquisition costs (CENTS PER kWh)

	Xcel Baseline	Low Cost	Low Cost (50% Wind)	No Coal	Local Generation
2017 (Day 1)	11.24	9.06	9.45	10.17	9.64
20 Year Avg	15.25	14.98	15.18	16.17	15.37

**Adding \$64M of debt only increases costs by 0.5 cents per kWh on average over 20 years**

# PART 1:

## Impact of Changes



Revision Area	Average Impact Over 20 Years (NPV)
XCEL BASELINE (Costs Went Down)	
Update to Xcel Baseline	-8% -1.27 cents/kWh
LOCAL ELECTRIC UTILITY OPTIONS (Costs Went Up)	
Change to Resource Prices (Wind, Gas, PV)	+6% +0.83 cents/kWh
Addition of 115 kV Loop	+1% +0.16 cents/kWh
Increased DSM	+0.5% +0.70 cents/kWh

# PART 1:

## Variations to Model



Identified Risk	Xcel Baseline	Low Cost @ \$150M	Low Cost @ \$214M
Removed Carbon Price (Cents per kWh)			
2017 Cents per kWh	10.74	8.80	8.81
Difference with and without Carbon Price	-0.50	-0.25	-0.25
Difference from Xcel without Carbon Price	n/a	-1.94	-1.93
Removed Capitalized Interest (Cents per kWh)			
2017 Cents per kWh	11.24	10.14	10.72
Difference with and without Cap. Int.	n/a	+1.09	+1.66
Difference from Xcel without Cap. Int.	n/a	-1.10	-0.52

**Even under these variations, the cost parity metric can still be met.**

# PART 1:

## Variations to Model



Range of Cost Savings Over 20 Years, Compared to Staying with Xcel  
Low Cost Option (\$150 million in stranded and acquisition costs)



# PART 1:

## Value Added in the Model



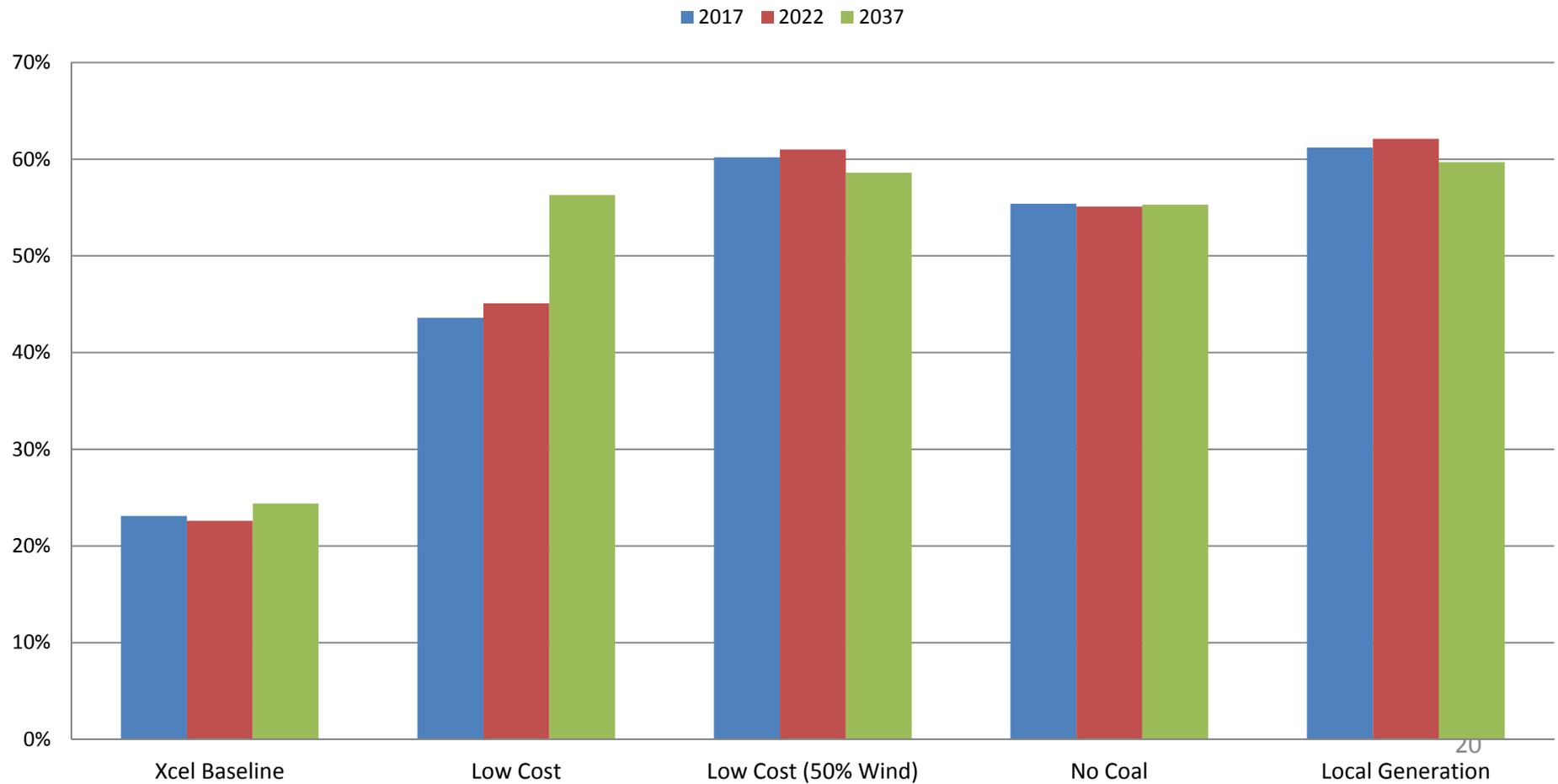
- Local electric utility options meet or exceed Xcel Baseline in several areas:
  - Proactive grid management and replacement plan
  - Equal or greater energy efficiency and solar incentives
  - More than double the renewable energy and half the emissions on Day 1

# PART 1:

## Value Added: Renewables



### Renewable Resource Mix by Option

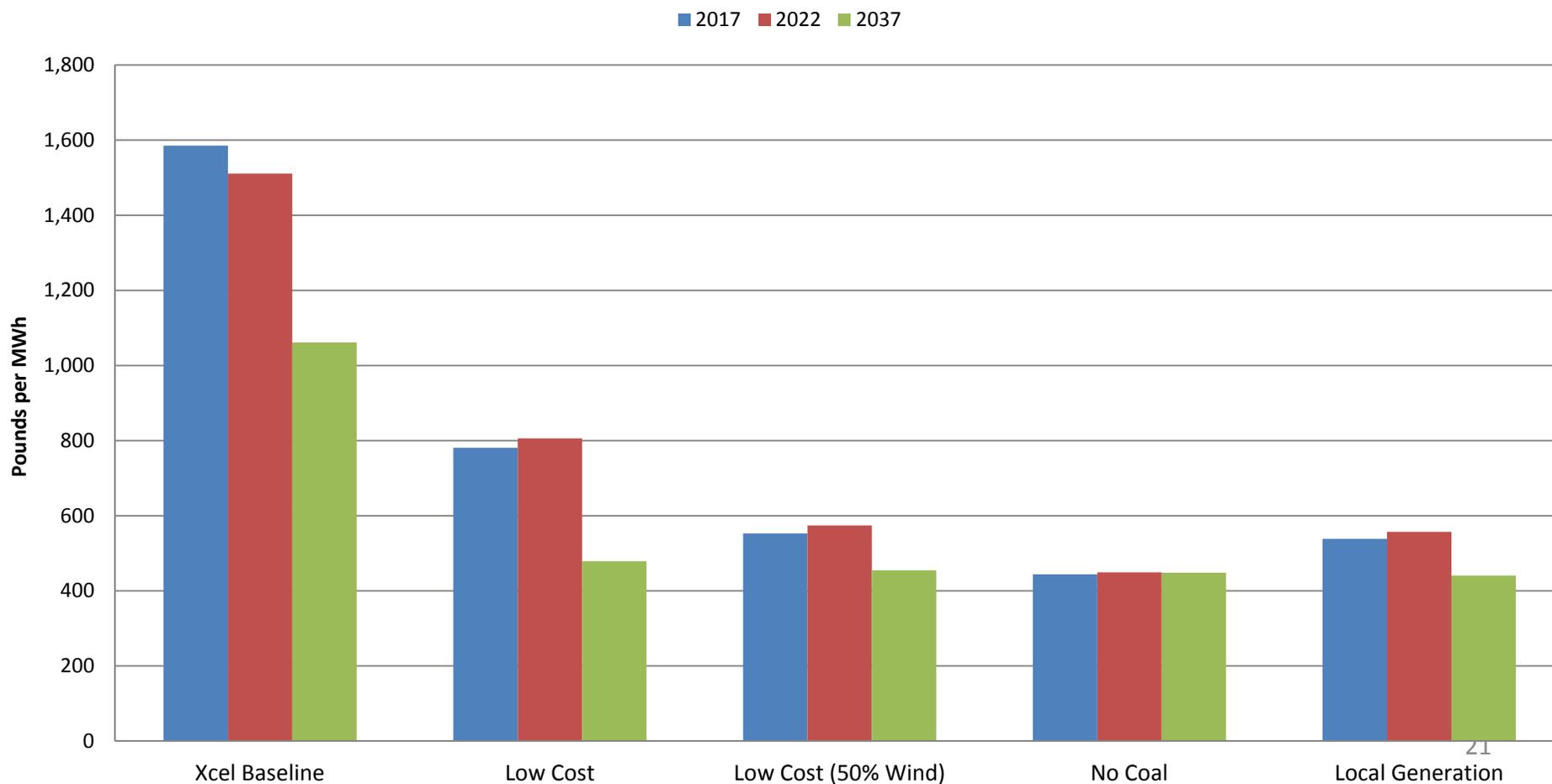


# PART 1:

## Value Added: Reduced GHGs



### Carbon Intensity by Option



# PART 1:

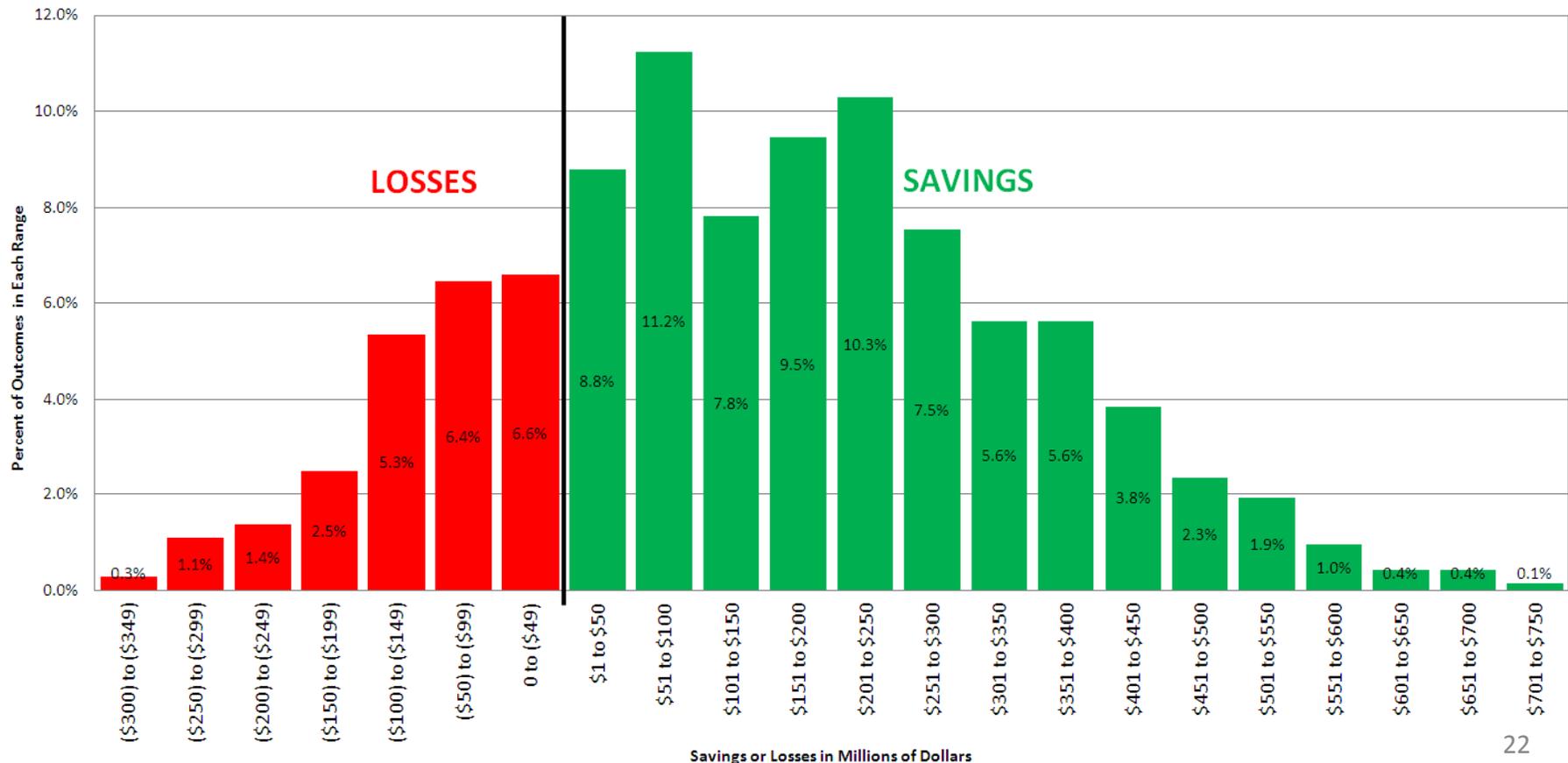
## Value Added: 20-Year Savings



**Distribution of Amounts of Cost Savings or Losses Over 20 Years for a Local Electric Utility Compared to Xcel Energy**

Low Cost Option at \$150 Million in Stranded and Acquisition Costs

729 model runs were conducted with varying levels of natural gas prices, wind prices, interest rates, carbon prices, operations and maintenance levels, and debt coverage levels.



# PART 1:

## Value Added: 20-Year Savings



**Distribution of Amounts of Cost Savings or Losses Over 20 Years for a Local Electric Utility Compared to Xcel Energy**

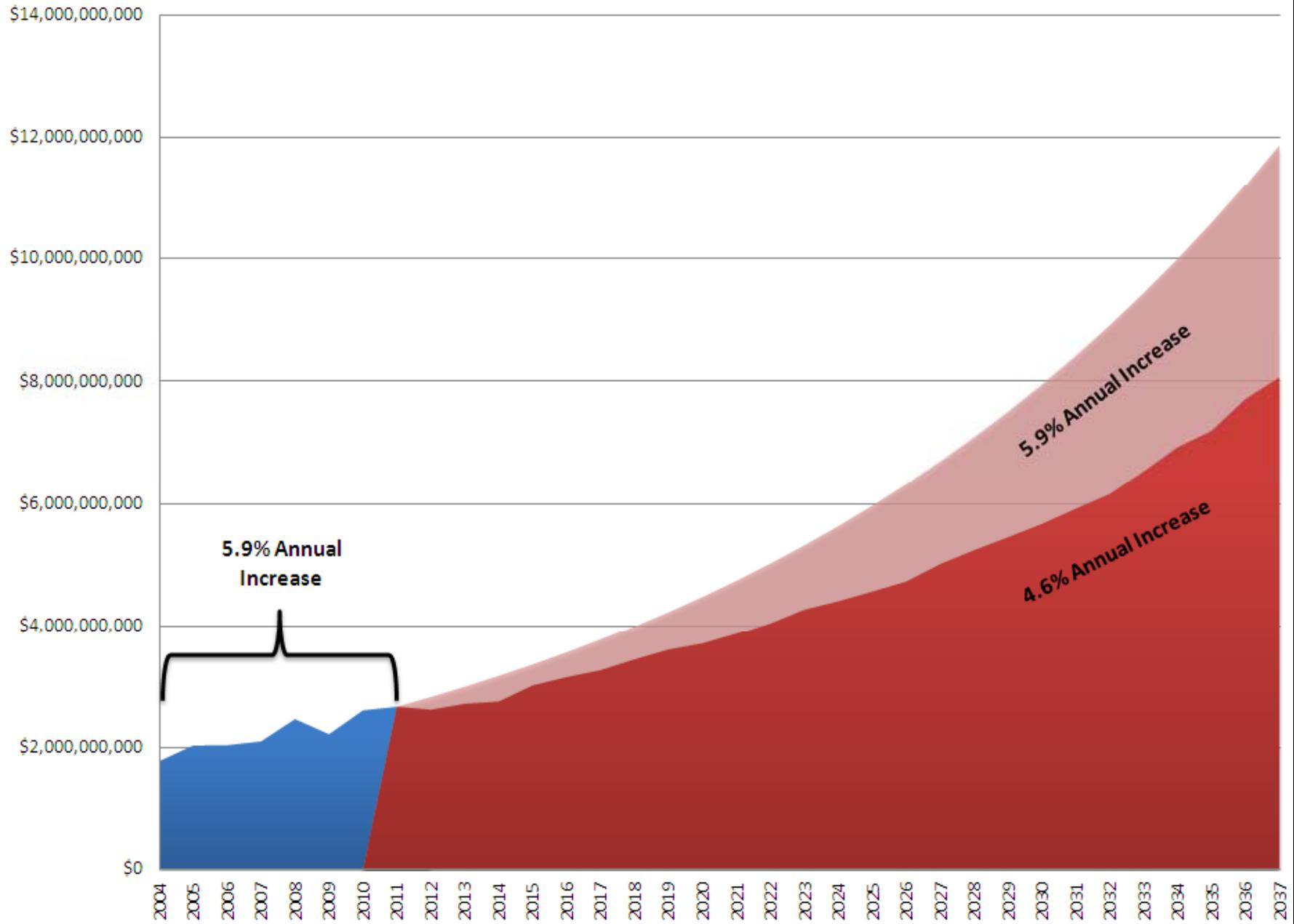
Low Cost Option at \$214 Million in Stranded and Acquisition Costs

729 model runs were conducted with varying levels of natural gas prices, wind prices, interest rates, carbon prices, operations and maintenance levels, and debt coverage levels.



# Xcel's Revenue Requirement: Actual and Modeled

■ Historic Revenue Collected (FERC 861 via EIA) ■ Forecast Revenue Need at 5.9% ■ Forecast Revenue Need (Model)



## PART 1:

# What if things are favorable?



For example:

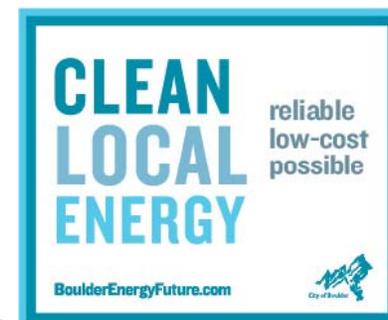
- Lower wind price (\$31/MWh)
- Xcel's revenues increase at historic levels

Takeaway:

- Modeling reflects conservative approach, but there are large potential upsides

# PART 1:

## Identifying & Managing Risks



### RISK

No carbon tax/GHG regulation

Gas price fluctuations

Availability of resources

No renewable energy incentives



### MITIGATION

Fuel source choices and increased distributed generation

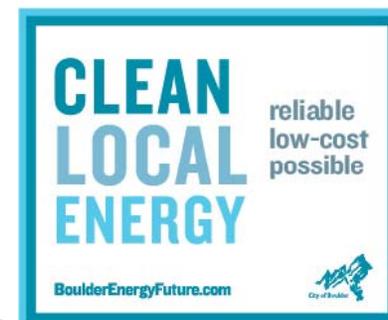
Adequate reserves; impact on Xcel as well

New resources available, over 6500 MW of wind in response to Xcel RFP

Modeled impact, technology advances could mitigate

# PART 1:

## Identifying & Managing Risks



### RISK

### MITIGATION

Stranded costs



Power Purchase from Xcel

Can't serve out-of-city customers



2-3% loss in revenue; not a risk

Transmission constraints



Capacity exists today to Boulder, Xcel as TSP must provide open access

Ability to respond to emergencies



Mutual Aid Agreements

Electric utility operations experience



Outsourcing and leveraging existing resources

# PART 1:

## Council Questions

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- Questions or comments on the modeling?

## PART 2:

# Qualitative Analysis



- Purpose to look at merits of proceeding on different paths, not just feasibility
- Explores the “should we” versus “can we”
  1. Assessment of Benefits and Concerns:
    - Status Quo with Xcel
    - Local Electric Utility
    - Partnership (TBD)
  2. “Utility of the Future” Practices

## PART 2:

# Qualitative Analysis

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### Key Takeaways

- Risks and benefits with Xcel and a local utility
- Xcel is making progress on emissions and renewables
- A local utility brings value to the community
- A local utility is agile and competitive, providing maximum flexibility to change
- Opportunity to develop new business model

## PART 2:

# Conclusions – Xcel Status Quo



## Concerns

- Heavy investments in coal generation
- Inability to meet local community objectives & customer desires under traditional structure
- Shareholders desire to maximize profit

## Benefits

- Economies of scale
- Established organizational and management structure
- Reliable provider with record of responding quickly and effectively to emergencies

## PART 2:

# Conclusions – Local Utility



### Concerns

- Inability to test model assumptions based on data provided by Xcel
- Significant undertaking
- Start-up must be carefully managed

### Benefits

- Able to re-invest excess revenues in programs & services that further Energy Future goals (profit not required)
- Customers have more direct access to decision-makers
- Fewer barriers to implement progressive practices
- Economic vitality and job creation

## PART 2:

# Conclusions – Local Utility



### Vision and Commitment of Local Utilities

- **Palo Alto** 48% renewable by 2017 plan for carbon neutrality
- **Los Angeles** 460 MW of solar power, plan for replacing 70% of fossil fuels in next decade
- **Austin** carbon neutrality on any new generation
- **Sacramento** plans to cut emissions by 90% by 2050
- **Seattle** plans to meet all electricity needs with zero net greenhouse gas emissions

# PART 2:

## Council Questions

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- Questions or comments?

## PART 3:

# Governance Working Group

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- 15 members
- Diverse background
  - Business, government, resident, county
- Met four times
- Conversations on “Basecamp”

# PART 3:

## Recommendations



### Recommendations for Advisory Board:

1. Make explicit role on advising on electric rates
2. Requirement of one non-city resident costumer
3. Representation of large and small businesses, and residents
4. Best efforts to recruit certain skills
5. Clean energy skill is a must
6. All potentially subject to sunset clauses

# PART 3:

## Remaining Issues

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- Advisory Board appointment process
- Advisory Board term limits
- Delegation of powers from council to board
- Advisory board/staff relationships
- Willingness to reconvene to continue work

# PART 3:

## Council Questions

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- Questions or comments?

# PART 4:

## City/Xcel Task Force

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### Purpose

To advise Xcel in developing a partnership proposal to present to Boulder as alternative to municipalization

# PART 4:

## Background

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- How did we get here?
- Task force made up of 12 community members + city and Xcel staff
- Three month process, facilitated weekly meetings
- Goals of parties

## PART 4:

# What Is Meant By Partnership?

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- Joint decision making regarding:
  - Fuel sources
  - DSM
  - Rate-structures
  - Infrastructure planning
- Data sharing
- On-going collaborative
- Accountability

# PART 4:

## Task Force Proposals



- Community Choice Aggregation (CCA)
- Phased CCA
- Aggregated coal plant retirements
- 5-year Boulder/Xcel agreement
- Wholly-owned Boulder subsidiary
- Boulder as wholesale customer

## PART 4:

# Xcel's Proposal



### Products and services at additional costs

- Carbon reduction strategies targeting 2043
- Continued participation in DSM and Renewable energy options, augmented by City of Boulder
- Enhancing SmartGridCity™, distributed generation, incubator to develop EE and DG programs
- Rate options such as unbundling, green rates
- Energy re-dispatch

# PART 4:

## Next Steps

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- Continue working with task force members
- Timeline – why we still have at least 6 months
- Value of moving forward

# PART 4:

## Council Questions

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- Questions or comments?

## PART 5:

# Separation and Acquisition

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- Finalized boundary map
- Includes 115 kV transmission loop
- Development of technically optimal separation locations for reliability on both sides of separation

## PART 5:

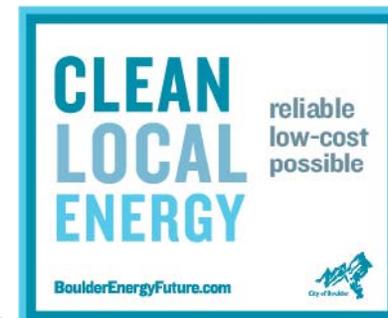
# What Does Separation Mean?



- Does not mean lines are severed
- Does not mean creating an island
- Interconnections used at boundaries to meter flow while maintaining reliability
- Interconnection points either:
  - Exist as Xcel operates the system now; or
  - Existing equipment relocated several yards; or
  - Additional equipment added (<10 locations)

## PART 5:

# How the Map Was Developed



- Instructions city gave engineers:
  - Serve all properties in city boundary
  - Serve all city properties with electric needs, where feasible
  - Separate the system at the technically optimum locations to maintain reliability for Xcel’s system and the new utility

# PART 5:

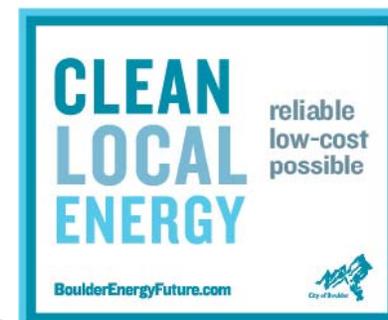
## How the Map Was Developed



- Engineers' list of criteria:
  - Interconnection points maintain or enhance quality of service, redundancy and capacity
  - Maintain the primary geographic area presently served
  - Serve contiguous geographic areas
  - Utilize existing points of interconnection as currently operated by Xcel

## PART 5:

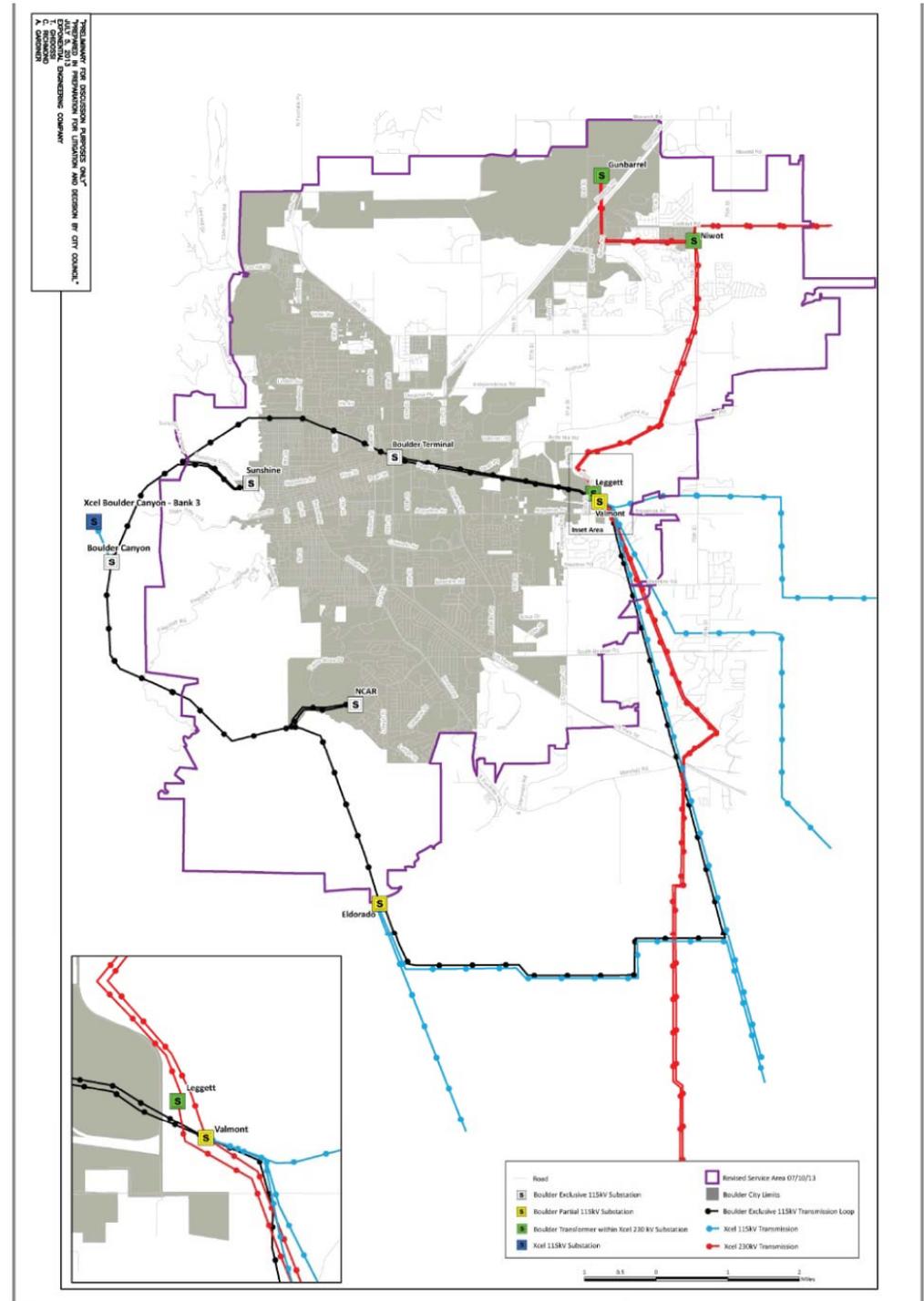
# How the Map Was Developed



- Engineers' list of criteria:
  - Maintain the ability to cross-feed between substations and utilize substation capacity
  - Use existing parcel boundaries
  - Minimize operational and maintenance conflicts
  - Minimize the need for new facilities
  - Eliminate the need for duplicate facilities

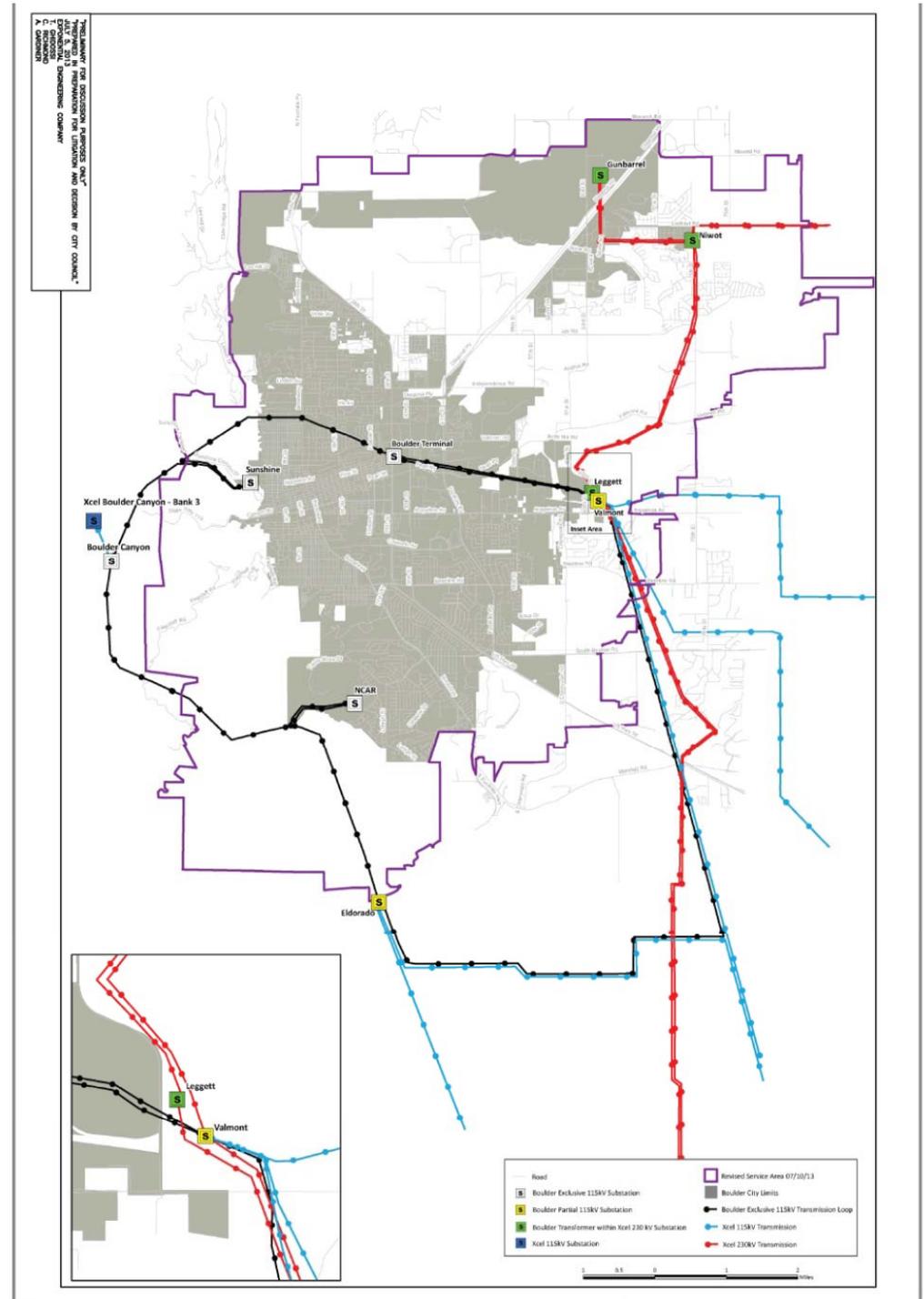
# Transmission System Map

- Part of economic and operational unit for service territory
- Allows new utility to manage flow throughout service area
- Reduces electric line losses
- Allows multiple points of delivery to distribution system
- Provides redundancy
- Provides access to city generation at Boulder Canyon Hydro

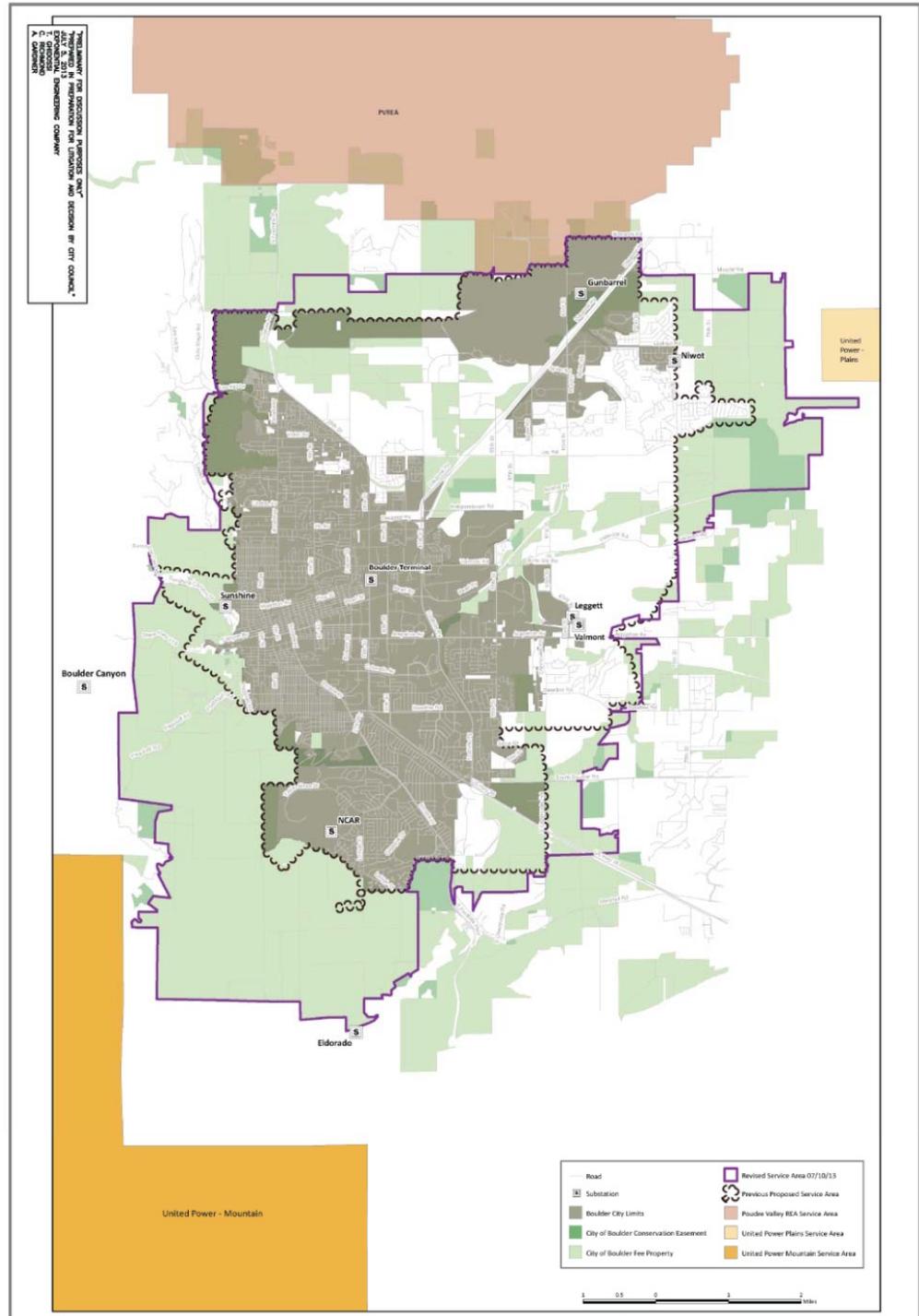


# Transmission System Map

- Provides redundancy to Xcel for service outside of service territory
- Necessary to manage local generation, storage, and demand response programs
- No negative impact to Xcel
- Benefits to Xcel:
  - Reduce Xcel costs for aged equipment
  - Xcel does not have to balance resources within city service area



# Distribution System Map



# PART 5:

## Council Questions

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- Questions or comments?

# PART 6:

## Next Steps

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- July 24 City Council Special Meeting
  - First reading ordinances:
    - Findings based on third-party verification
    - Acquisition
    - Initiated ballot measure
- August 6 City Council Meeting
  - Second reading and public hearing of July 24 ordinances
- Define Phase 3 of the Work Plan
  - Boulder Local Electric Utility
  - Legal and regulatory actions
  - Continue working with Xcel

# Questions for Council

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1. Is there sufficient information to move forward with acquisition of Xcel's electric system assets through negotiation and/or condemnation?
2. How does council want staff to proceed with discussions about Xcel's proposal?