Smart Grid City – Developing the Smart Grid of the future

US EPA

Smart Grid and Clean Energy for Local Governments

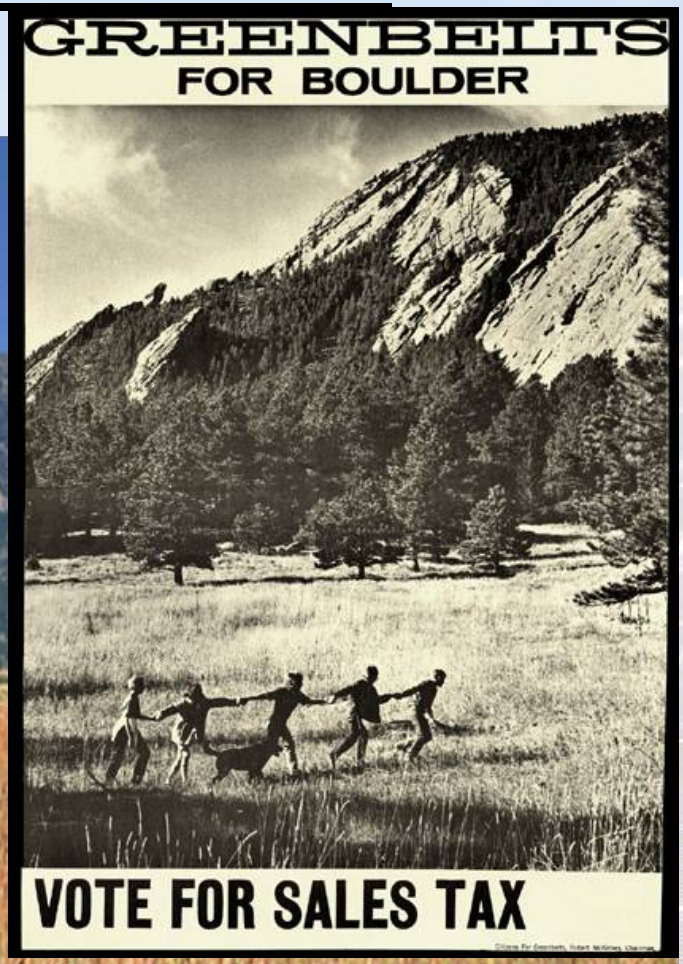
April 29, 2010

What led to Boulder's *Smart Grid City?*

A history of preserving our environment

Open Space and Mountain Parks

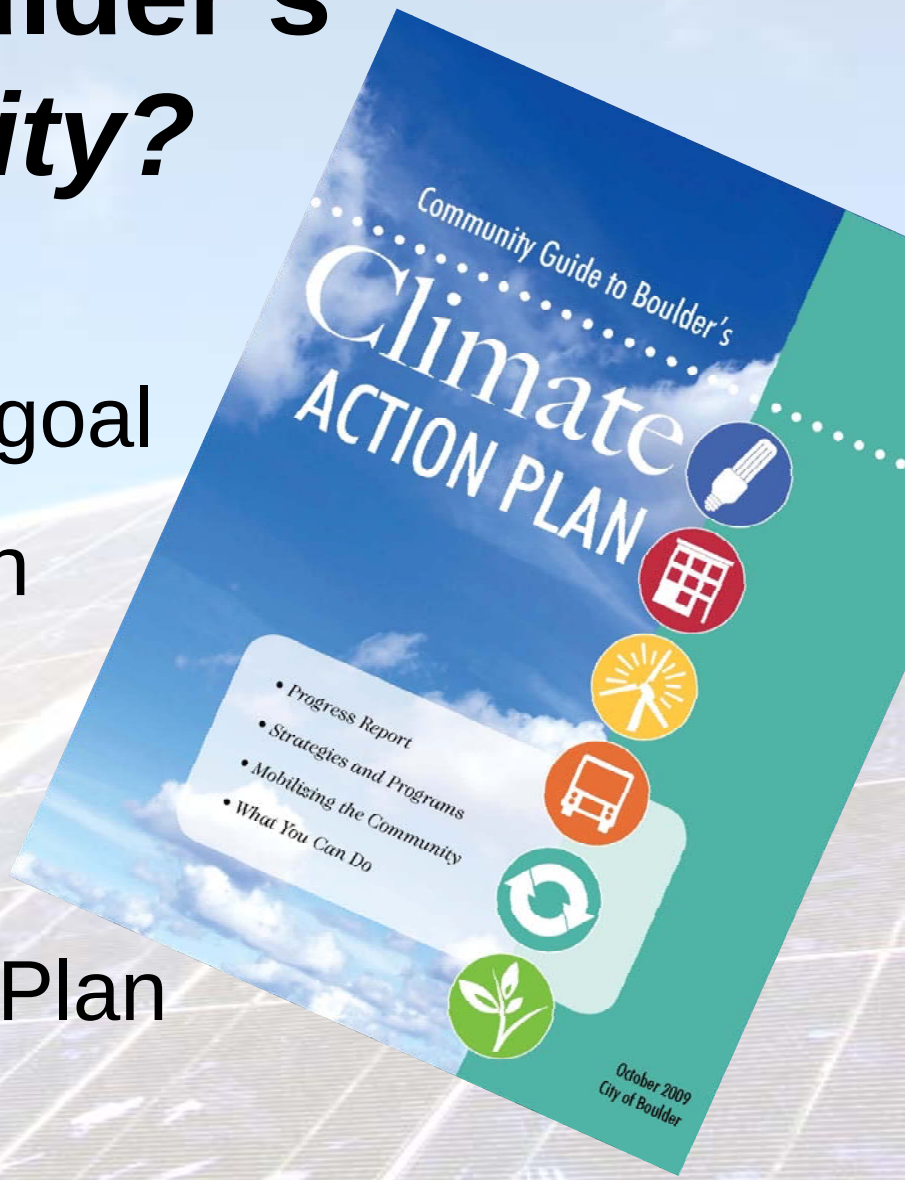
- 1875-1916: Mountain backdrop purchased
- 1967: Open Space Tax



1976: Curbside recycling

What led to Boulder's *Smart Grid City?*

- 2002 – Kyoto protocol goal
- 2003 – Municipalization
- 2005 – Two phase investigation
- 2006 – Climate Action Plan Tax

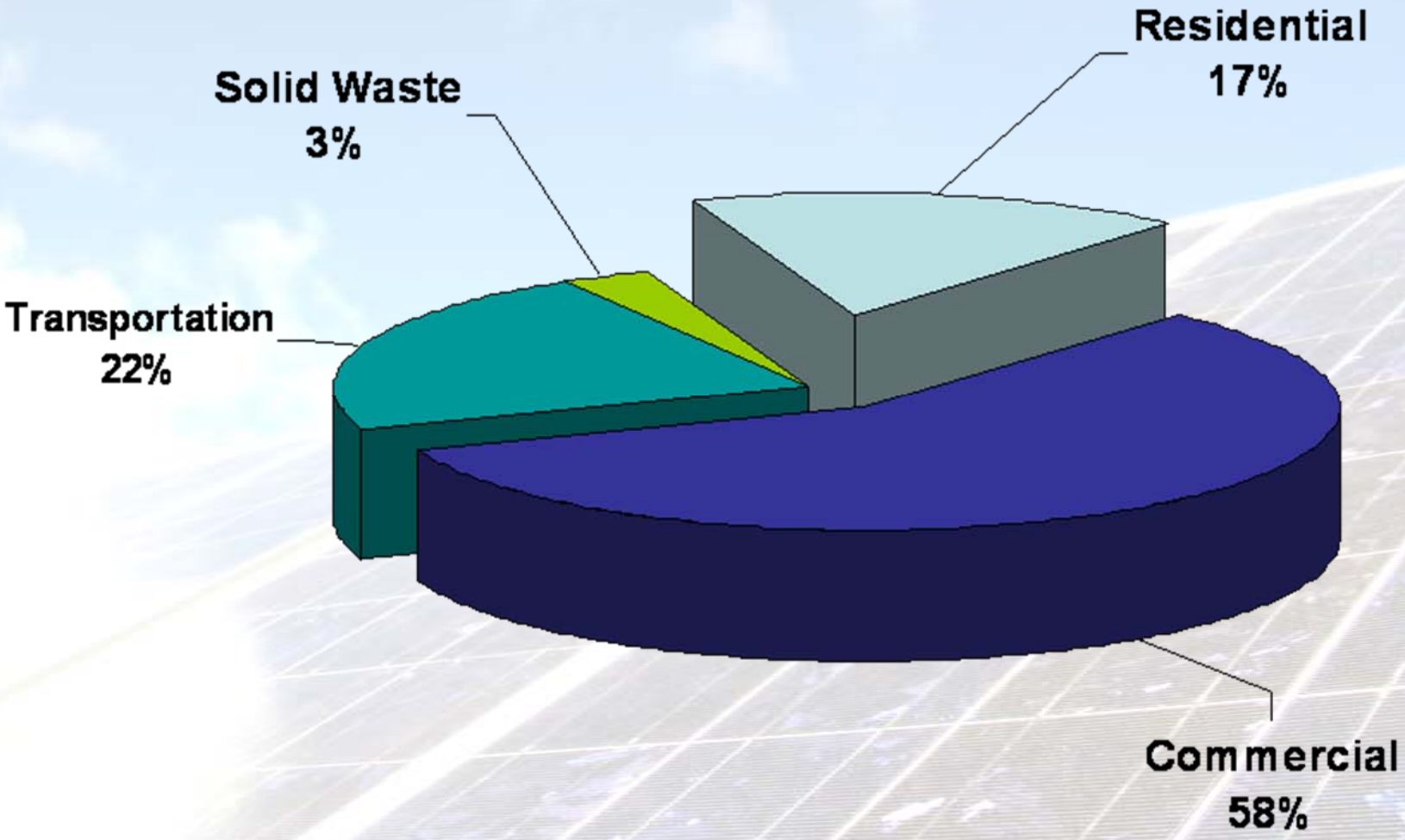


Objectives identified by City Council

- Renewable energy
- Reliability
- Conservation & energy efficiency
- Rate stabilization & economic vitality

- 2007 – *Smart Grid* proposal

Greenhouse Gas Inventory



Smart Grid and Boulder's Climate Action Plan goals

- Peak demand reduction & efficiencies
  - 15,000 to 50,000 tons CO_2
  - 5% to 25% of CAP goal
- Renewable Energy

The Xcel Energy – Boulder partnership

Xcel Energy and its partners:

provide financial capital

City:

provides social capital

Smart Grid City

- Grid efficiency/reliability
- Consumer behavior
- Automation: programmable modules
- Demand response: utility control
- Distributed generation and storage

The partnership evolves

- Check in with the community
- Check in with city council
- Refine partnership

Issues - customers

- Frequent feedback
- How many premises?
- Residential vs. commercial
- Low-income
- Central air conditioning

* Critical success factor- feedback loop*

Issues - technology

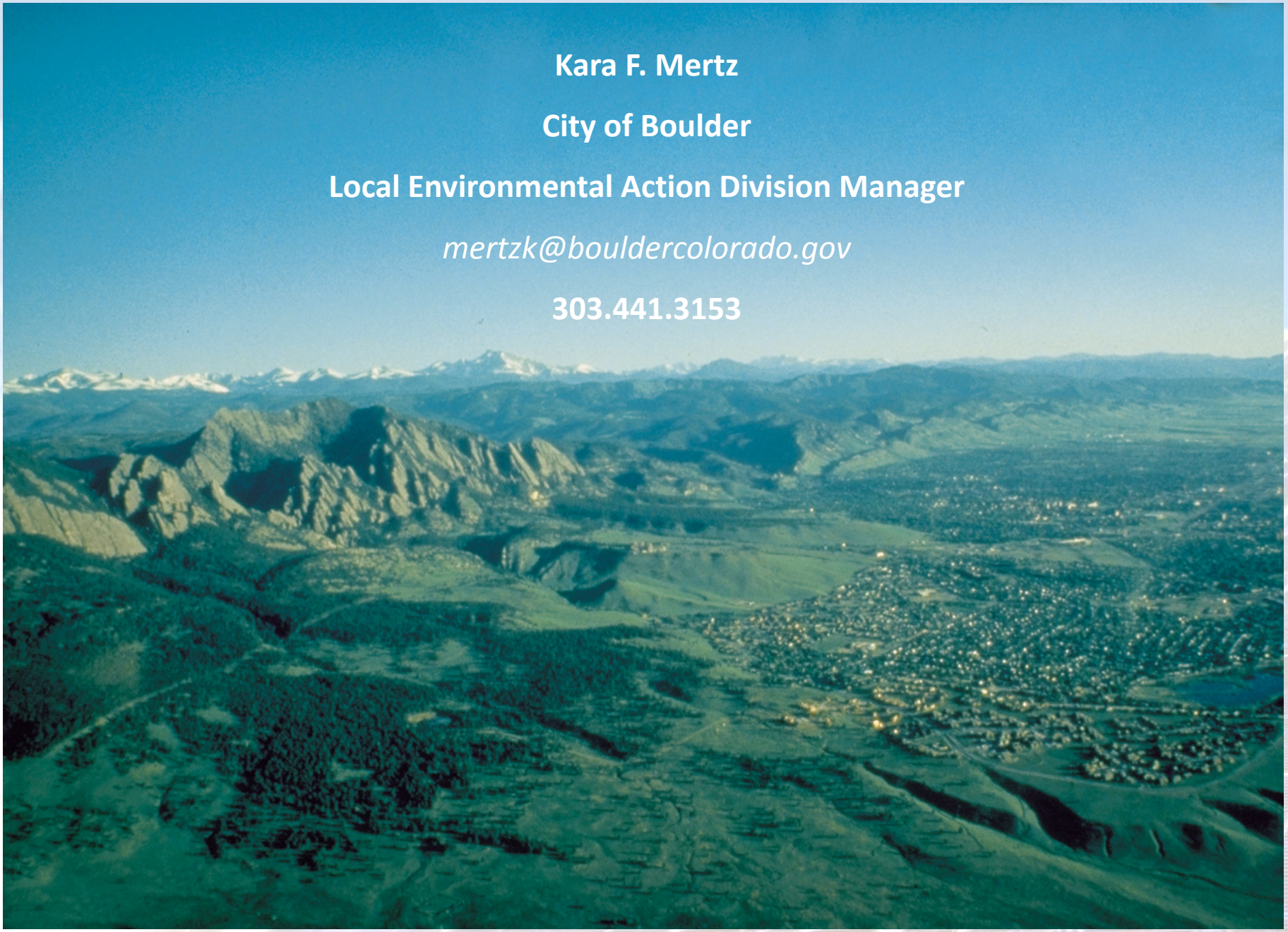
- Future standards / protocols
- Scalable
- Open platform
- Security

* Critical success factor- feedback loop*

Issues – regulatory

- Rate structure and price signals
  - Peak load reduction
  - conservation
- Carbon signals
- More green power
- Access to data
- National carbon tax?

* Critical success factor- feedback loop*



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