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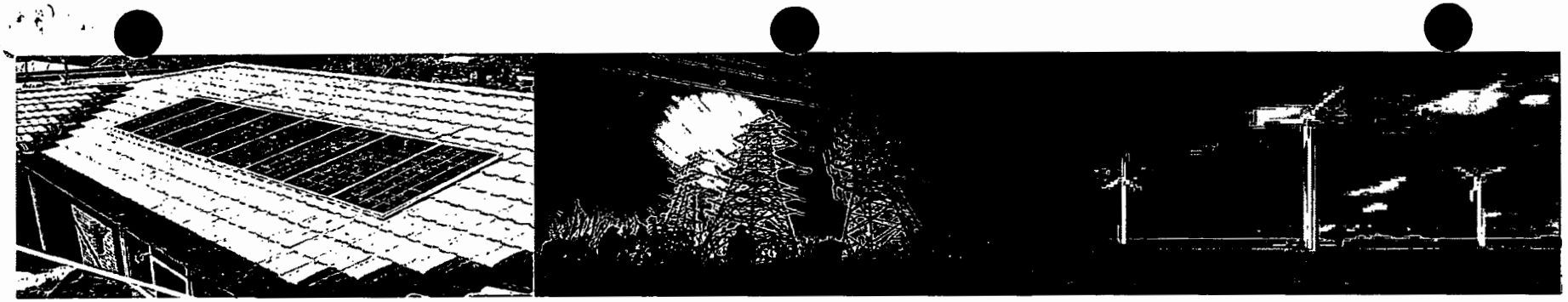
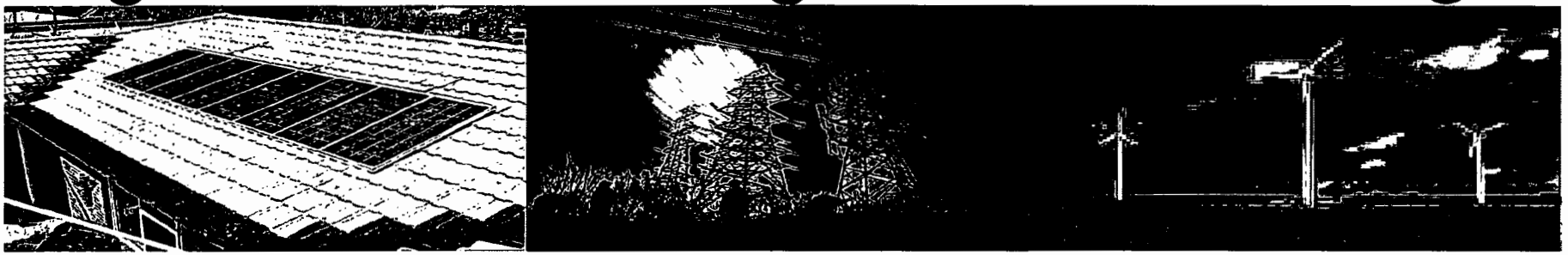


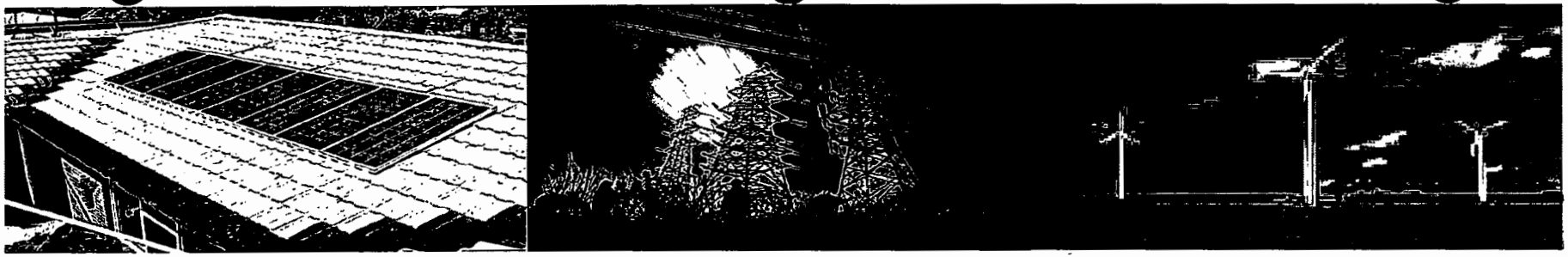
Presentation to the Collus Power Strategic Planning Session January 14, 2010

By
David J. McFadden Q.C.
Board Member



Electricity Made the 20th Century

- Electricity made the economic and social developments of the 20th century possible
- Electricity was the fundamental enabler for the development of radio, television and other telecommunications, computers, advanced manufacturing, leading edge medical technology and mass air transportation



Importance of Energy to Canada

The Canadian Chamber of Commerce released a report entitled "Powering Up Canadian Prosperity" in October which states:

> *"The Energy sector is one of the cornerstones upon which our country was built."*

The Canadian Chamber in its report calls for a national energy strategy which will "*ensure Canada has access to a stable, secure and flexible supply of affordable energy now and in the future*".

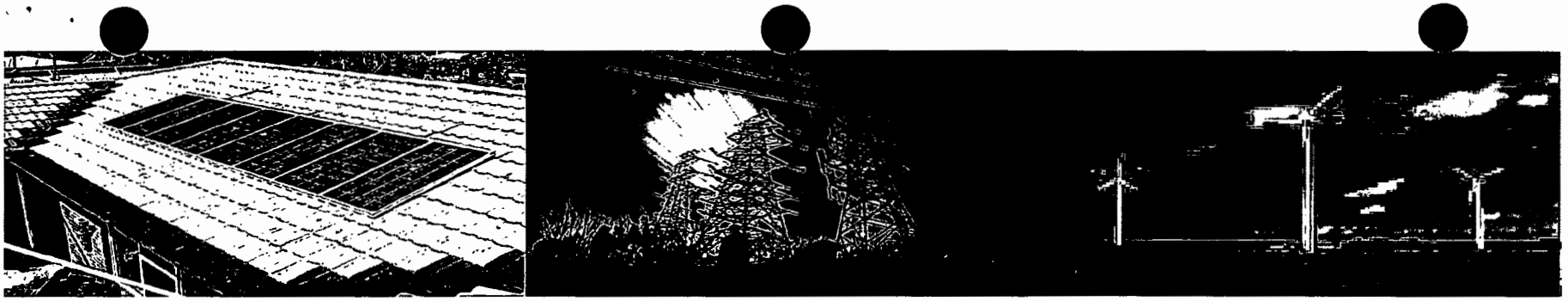
Much of the Ontario economy was built around a cheap and reliable supply of electricity.

Looking to the Future

- Visions of the future are not always clear or accurate
- *"The 20th century is about to dawn on the world and still Niagara has not been "utilized"… It is safe to say that Niagara and all other greater water powers of the world will continue to waste their strength as they have done in the past. The hope of a wide diffusion of mechanical power by means of electricity lies in a fundamental misconception of the laws of electricity."*

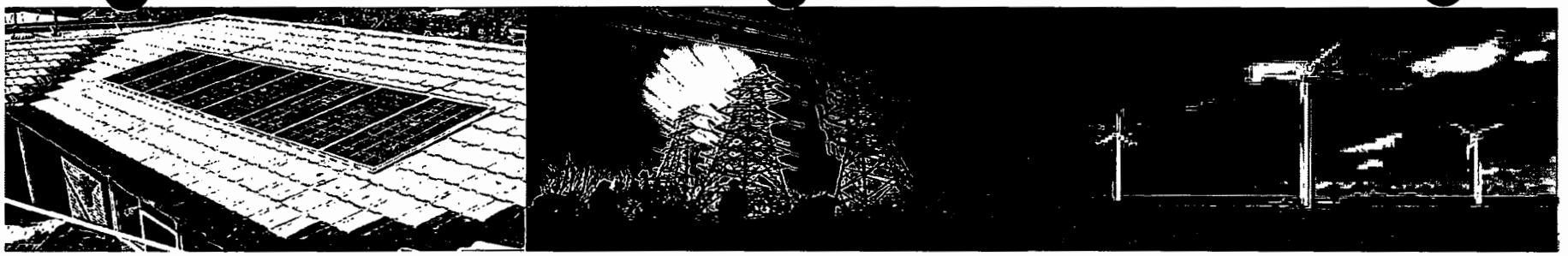
  (Chicago Times, June 8, 1892)
- *"There is not the slightest indication that nuclear energy will ever be obtainable. That would mean that the atom would have to be shuttered at will."*

  (Albert Einstein, 1932)



Looking to the Future (2)

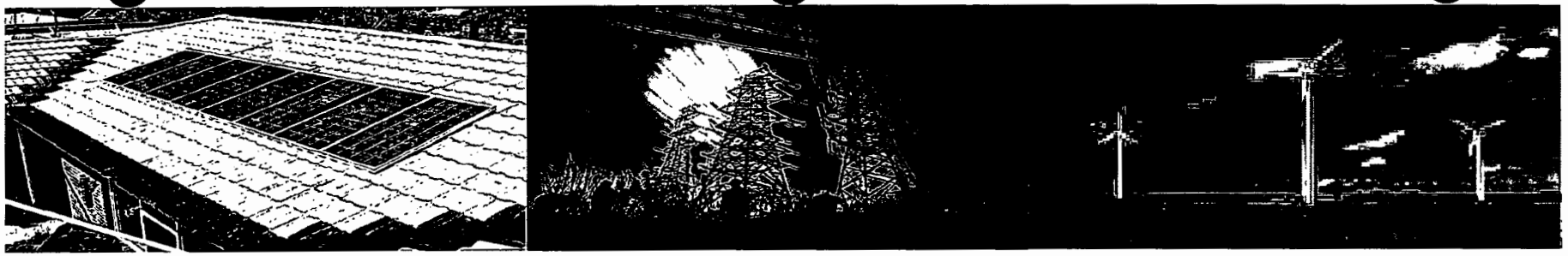
- Innovations of the late 19th century powered the 20th century.
- The only really significant innovation on electricity generation developed in the 20th century was nuclear power in the 1950's.
- If Edison came back today, he would feel right at home in the electricity sector.
- The same couldn't be said in telecom if Alexander Graham Bell came back.



A Vision for the Future

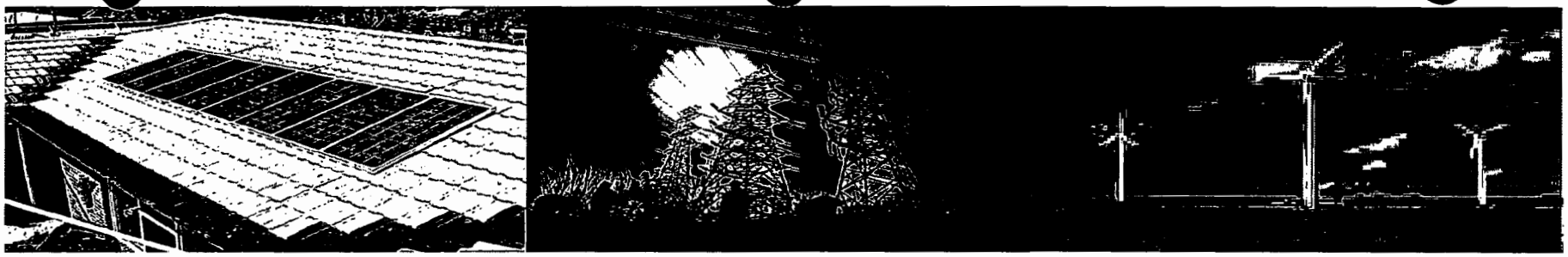
"It is not an exaggeration to claim that the future of human prosperity depends on how successfully we tackle the two central energy challenges facing us today: securing the supply of reliable and affordable energy; and effecting a rapid transformation to a low-carbon, efficient and environmentally benign system of energy supply. What is needed is nothing short of an energy revolution."

-International Energy Agency
World Energy Outlook, 2008



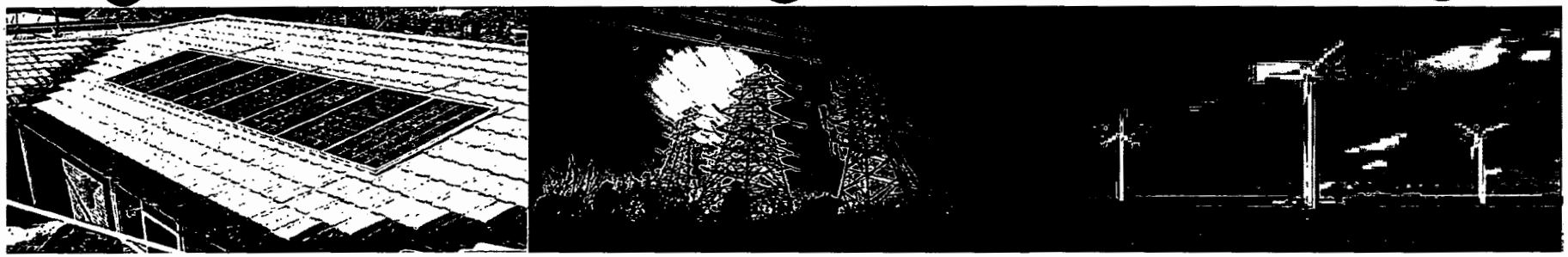
A Vision for the Future (2)

- The world will rely more on electricity in the 21st century than in the 20th century
- Key drivers in North America:
  - concerns about climate change and pollution
  - intersection of the electricity and transportation sectors with the mass deployment of electric and hybrid electric vehicles
  - mass dispersal of power sources
  - smart grid and development of distributed generation to the household level



The Response

- We are now in the midst of a period innovation in the electricity sector unseen since the 19th century
- Billions of dollars being invested worldwide on new technologies, systems and approaches in response to the range of global challenges and opportunities
- Ontario joined this global drive with the creation of the Ontario Centre of Excellence for Energy in January, 2005

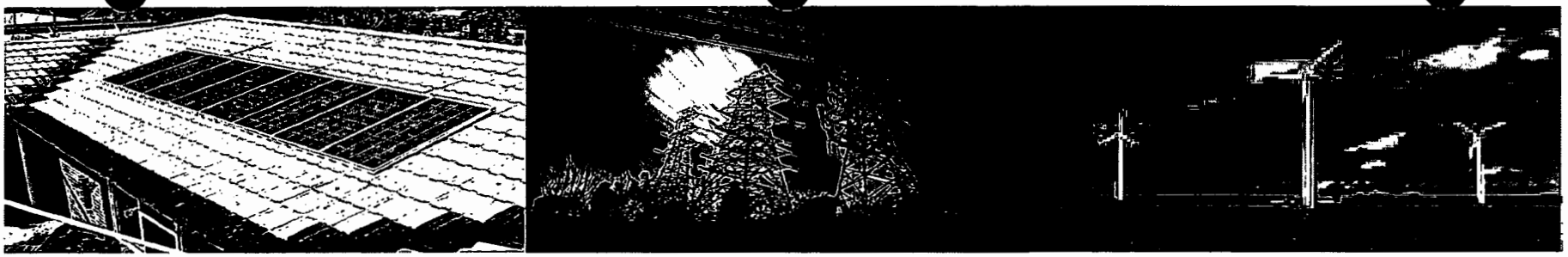


Ontario's Response

Since the establishment of the Centre of Excellence for Energy, the Ontario Government has invested over $30,000,000 in energy innovation through OCE:

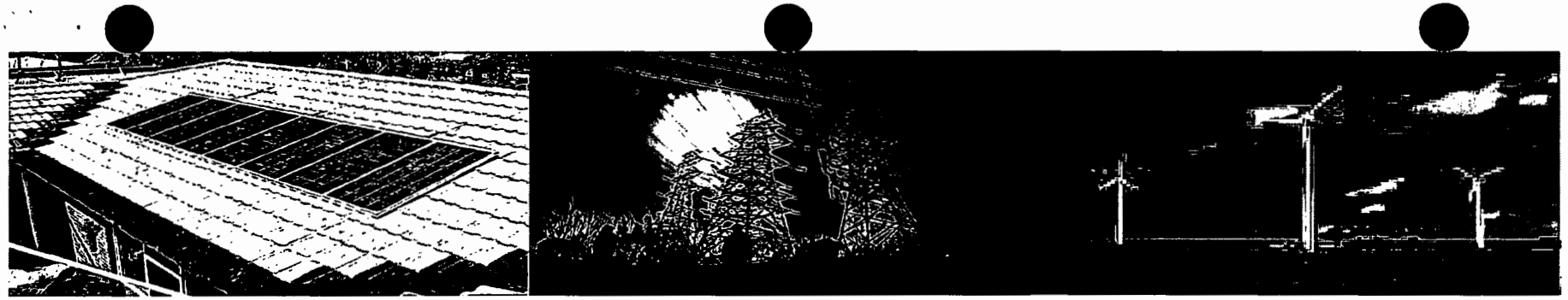
- $2,000,000 per year in core funding from the Ministry of Research and Innovation
- $15,000,000 in 2007 from the Ministry of Research and Innovation to deliver transformative energy projects
- $4,000,000 in 2007 from the Ministry of Energy to support the Atikokan Bioenergy Research Centre
- $2,000,000 partnership with the Ontario Power Authority for the technology development fund

All of OCE's projects are matched at least dollar-for-dollar by the private sector.



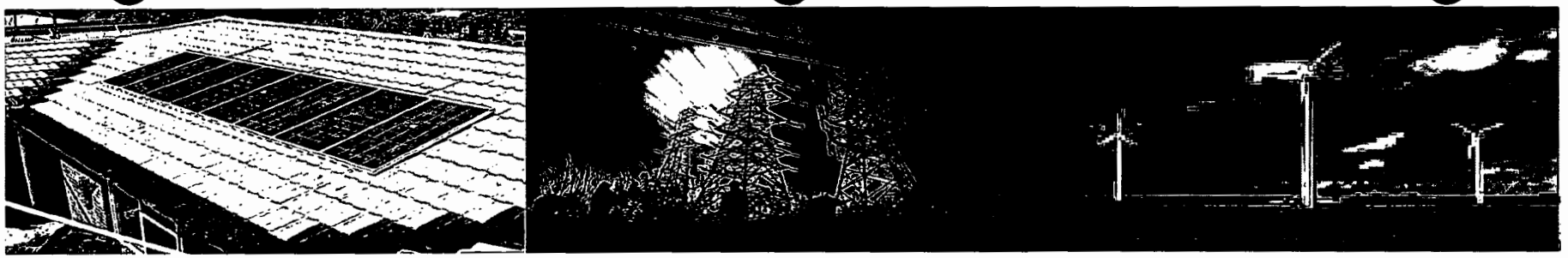
Ontario's Response (2)

- The Centre of Excellence for Energy currently has a portfolio of approximately 60 projects
- The projects encompass innovative development in such areas as:
  - high efficiency solar cells
  - power generation from biogas
  - wind power from vertical – axis wind turbines
  - energy hubs to enable real time management of energy demand, production and storage
  - sensor for managing energy efficiency and GHG in industrial furnaces
  - alternative energy generation for remote communities
- Projects involve universities, colleges, manufacturers, engineering firms and LDC's across the province



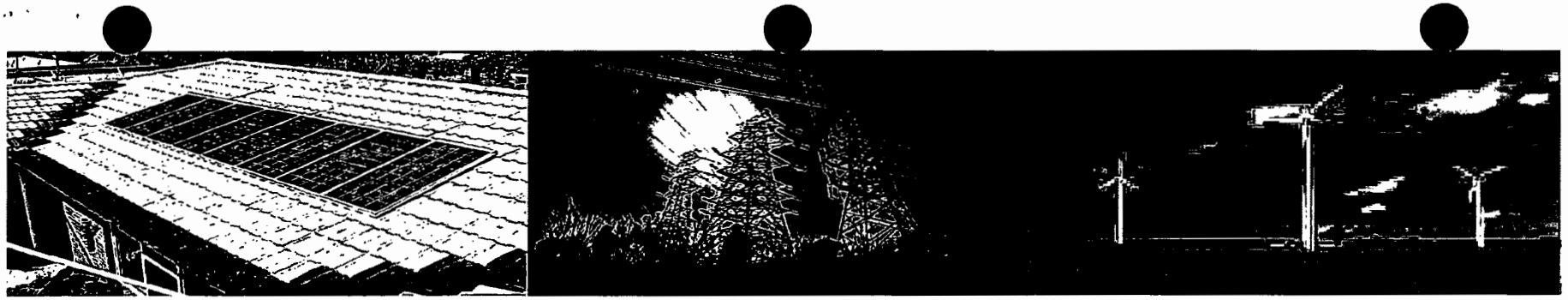
Ontario's Response (3)

- Energy Competition Act passed in 1998:
  1) mandated the corporate structure
  2) settled the ownership question
  3) established a regulatory framework
- Green Energy Act passed in 2009:
  1) mandated the implementation of the smart grid
  2) opened the door for involvement in power generation
  3) confirmed a role in energy conservation and demand management



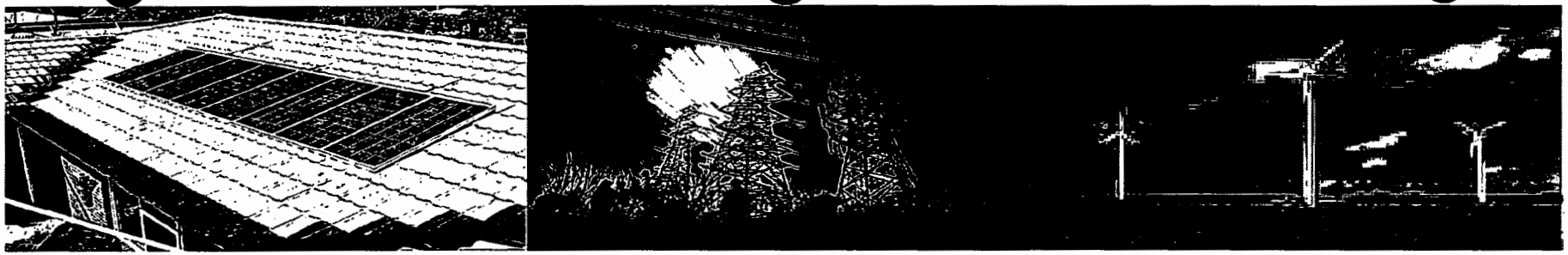
Challenges Created for LDC's by the Green Energy Act

1. Smart Grid
   - The Green Energy Act implements the recommendations made in the report of the Ontario Smart Grid Forum released in early February 2009
   - Smart Grid will cause a paradigm shift in the distribution sector with a two way flow of electricity information on our electricity grid
   - Smart Grid could have the kind of effect on the electricity sector which the introduction of wireless technology had on telecommunications



Challenges Created for LDC's by the Green Energy Act (2)

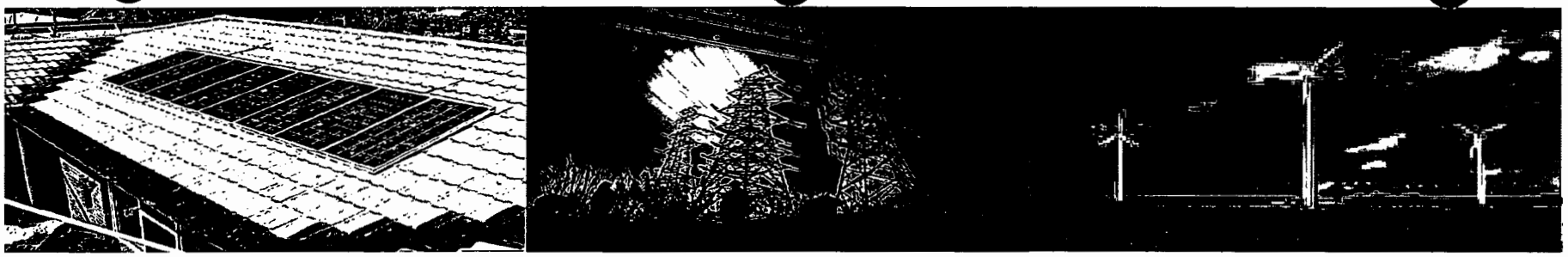
- Job of developing smart grid across Ontario to be vested in transmitters and LDCs
- Each LDC required to submit to OEB plans for the development and implementation of Smart Grid in their system
- Each LDC will then have as a condition of license to make a required investments to implement smart grid in their systems
- Launch smart grid will:
  - ➢Greatly enhance the reliability of Ontario's electricity system
  - ➢Provide real choice for consumers
  - ➢Enable new opportunities in energy from facilitating distributed generation to enabling the broader use of electric cars



Challenges Created for LDC's by the Green Energy Act (3)

Smart Grid - Questions / Challenges

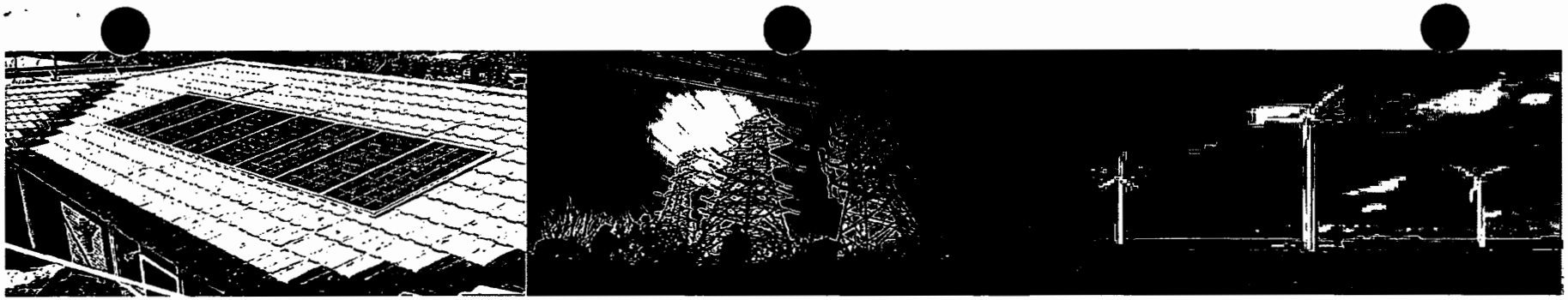
- standards
- technologies to the employed
- cybersecurity
- investment required
- cost recovery
- timing for deployment
- impact of development of microgrids
- impact of broad use of electric vehicles



Challenges Created for LDC's by the Green Energy Act (4)

2. Generation

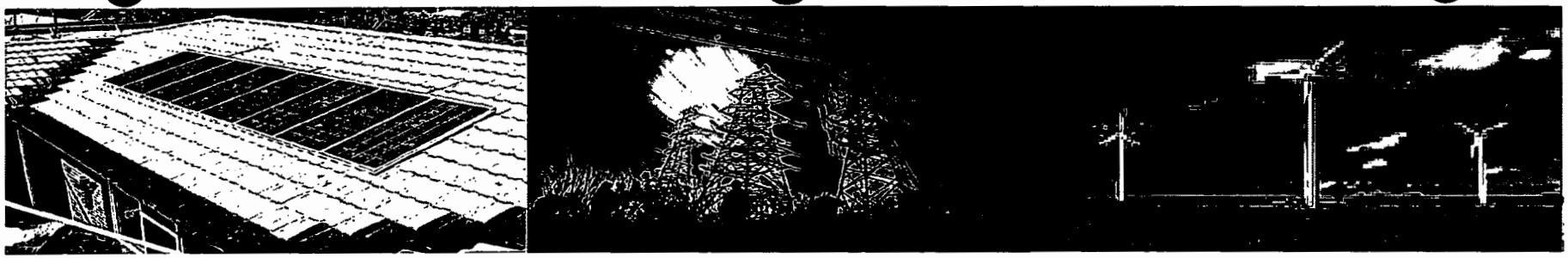
- LDCs will now be permitted to own a renewable energy generation facility that:
  - Does not exceed 10 MW (or such other capacities prescribed by regulations)
  - Uses technology that produces power or thermal energy from a single source
  - Employs an energy storage facility
  - Reversal from current prohibition on LDCs being generators



Challenges Created for LDC's by the Green Energy Act (5)

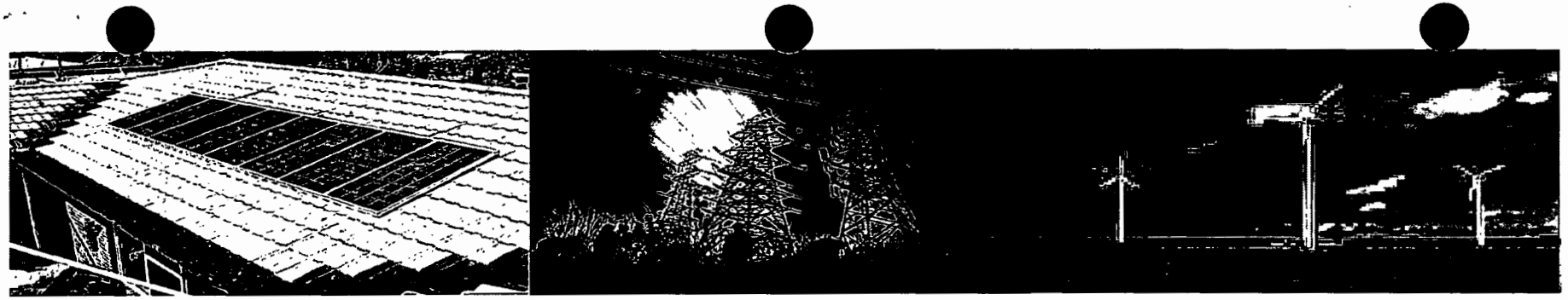
Generation - Questions / Challenges

- rising electricity prices
- local demand
- type of technology
- investment required
- rate of return
- part of rate base
- partnership / joint venture



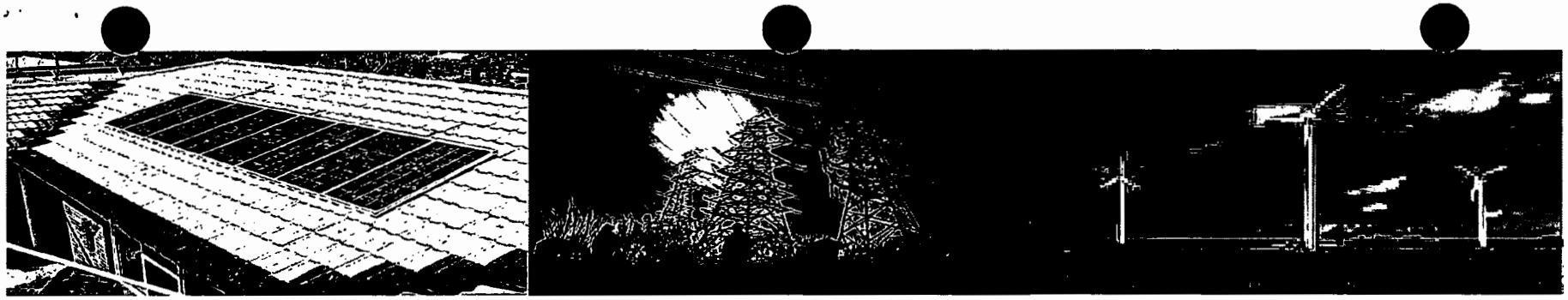
Municipal Governments and Generation

- Municipalities will now be permitted to be involved in the generation of electricity
- A municipality, municipal services board, city board or a municipal services corporation may generate energy provide:
  - a generation facility is a renewable generation facility of less than 10 MW
  - the generation facility meets criteria as prescribed by the Minister of Energy and Infrastructure
- The municipalities will have flexibility in establishing generation facilities including structuring joint ventures with third parties
- Unlike LDCs, municipalities may be involved only in renewable energy generation but not in energy storage



Conservation and Demand Management

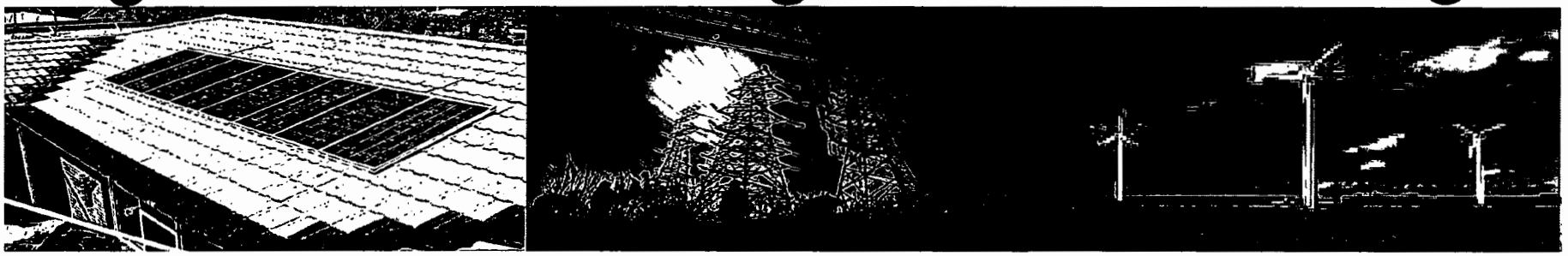
- LDCs to have central role in meeting Ontario's conservation and demand management objectives
- Minister given the power to issue directives to the OEB establishing CDM targets to be met by LDCs
- CDM targets likely to be imposed as a condition of licence
- The Act contemplates that one size may not fit all in the area of CDM management
- LDCs to be compensated for the cost incurred in connection with CDM activities through deferral or variance accounts for costs incurred



Future Vision

Questions for us to consider:

- Will our current structure and approaches meet future demands, challenges and opportunities?
- Can we remain the same while the world changes around us?
- Are we able to provide a compelling vision to meet the needs of the future?



Future Vision (2)

- The Green Energy Act has "thrown down the guantlet".
- A vision of the future will require us to think about:
  - amount of investment required
  - sources of financing
  - ownership
  - skills required of management, staff & boards of directors
  - community economic, social and environmental benefits
  - risk management

Future Vision (3)

- The winds of change are blowing

  "I find the great thing in this world is not so much where we stand as to what direction we are moving; we must sail sometimes with the wind and sometimes against – but we must sail, and not drift, nor lie at anchor."

  (Oliver Wendell Holmes)