



Why Energy Data?



We live in a world of rapid change:



☐ Arising from outside government

☐ Government addressing problems

Technology, Business
Model & Social Innovation

Socio-economic and Environmental Challenges

High quality data is required for the critical analysis and modeling to inform policy and investment decisions.



Shortcomings of Energy Systems Data

Geography, Culture, Marketing

WHAT NATURE PROVIDES:

WHAT ENERGY SYSTEMS
DEVELOPERS CREATE:

WHAT PEOPLE ASK FOR:

WHAT
PEOPLE
WANT/NEED:

Sources

Harvesting/ Processing Technol.

GHGs

Currencies

Service Technologies

GHGs

Services

Amenity

- Fossil Fuels
- Sunlight
- Wind
- Biomass

Resource

potential.

especially

renewables

...

NEEDS

SOME DATA

- Fossil Fuel recovery, refining & transport
- Power plants
- Solar PV
- Wind turbines
- ...
- Techno-economic & environmental data on conversion, storage & transport technologies
- Details on the stock, size & replacement time for key infrastructure
 - Fugitive emissions data

- Gasoline
- Diesel
- Electricity
- ...
- Detailed, compiled data on the supply and disposition of energy currencies.

- Automobile
- Computer
- LED light
- Refrigerator
- X-ray machine
- Furnace
- • •
- Industrial fuel and electricity demand, plus process emissions coupled to creation of end product.
- Details on the stock, replacement time & rates of energy use for energy-using infrastructure (from buildings and vehicles to appliances, etc)
- Thermal characteristics of building stocks

- MobilityShelter:
- Vacations:
- Food and drink;
- "Things"
- tricitv
- Comfort
 - Convenience

Community

- Sustenance
- Illumination
- Access
- Health care
- Status/value
- ...
- Health impacts of air emissions
- Systems level energy use & emissions associated with various products (from cell phones to vehicles to food)
- Flows of bio-based energy and carbon plus fugitive emissions in agriculture, forestry and landfills (currently energy systems = only fuel + electricity)



Proposed Energy Data Ecosystem



A New 'Canadian Energy Information Organization' (CEIO)

- □ Data Mgmt. Compile, validate & make available detailed, regional, historical data relevant to energy supply and demand in Canada;
- ☐ Analysis. Trend and
 Decomposition Analysis;
 program assessment;
- **Web Portal.** Provide access to data and information on historical trends, etc.
- ☐ Energy Literacy



Products for Climate Change, Innovation & Economic Development Policy

- ☐ Assess Policy Options;
- ☐ Assess progress of existing policies & programs;
- ☐ Define **Credible, Compelling** Pathways **Capable** of achieving targets for CC & economic prosperity;
- Build interest, enthusiasm about transitioning to a 'better tomorrow';
- ☐ Train highly qualified personnel in analysis & modeling of systems change;
- ☐ RD&D Priorities;
- ☐ Improve energy literacy.



Recommendations for CEIO



Canadian Energy Information Organization

Vision, Mission & Values	 High quality, coherent, regional & national energy data supports evidence-based policy and investment decisions needed to address climate change and provide economic prosperity; Support analysis and modeling efforts done elsewhere; Open access (where possible), accurate, reliable, trustworthy, non-controversial, non-political;
Governance	 Closely linked to government departments with authority to collect data; Governance model that engages provinces, territories & industry associations providing data, as well as the users of the data;
Activities	 Maintains a staff to compile, validate, analyze and report on energy data (including fuels, electricity, food and fibre); Significant effort is invested in understanding and responding to the needs of data users Focus is historical data and trends: does not do forecasting, scenarios, optimization modeling Web portal provides data access, Possibly partners with science centres / educational groups to enhance energy literacy
Funding	☐ Federally funded; Provinces and industry contribute data



Recommendations for CTPI



Canadian Transition Pathways Initiative

Vision, Mission & Values	 Towards collective, positive visions for systems change that will meets socio-economic and environmental objectives Define & characterize Credible, Compelling Pathways Capable of achieving societal objectives including - but not limited to - greenhouse gas management; Interdisciplinary, innovative, forward thinking, evidence-based, engaged with industry, gov'ts
Governance	 Freestanding, NFP research foundation with an independent management board; Governance model that engages and encourages industries, governments, NGOs, and academics to explore exciting visions for systems change that can achieve societal goals
Activities	 Majority of funds to support transition pathway development in regions, sectors, etc; Small staff complement would (a) build multi sector, multidisciplinary networks around credible, compelling visions, and (b) create powerful, open-access modeling tools; Workshops, conferences, competitions for grants & contracts, web and multimedia presence; Spin off consortia of companies working to realize Transition Pathways.
Funding	☐ Core federal funding with 10 year commitment; Provincial and Industry funding of specific projects



Energy Data is Essential for Defining Transition Pathways





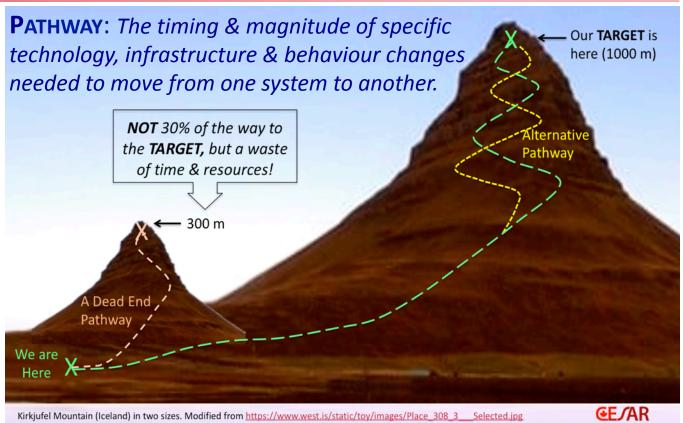
PATHWAYS must be:

1. CREDIBLE

☐ Technically, economically, socially

2. COMPELLING

- ☐ Desirable by key stakeholders
- **3. CAPABLE** of achieving the target.







Thank You!

David B. Layzell, PhD, FRSC.
Professor and Director,
Canadian Energy Systems Analysis Research (CESAR) Initiative,
University of Calgary

dlayzell@ucalgary.ca 403 220-5161 www.cesarnet.ca