How to Harness People as an Intervention and Evaluate Such a Program

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Outline

01 Program Background

02 Impact Evaluation Approach

03 Process Evaluation Approach

04 Holistic Evaluation Approach

05 Results and Conclusions

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IESO's Energy Manager Program

- IESO subsidizes salary of full-time embedded Energy Managers
  - Find energy savings, identify smart energy investments, secure incentives
- Annual minimum savings goal – 1,000 MWH
  - 10% from non-incented measures
- EM Support Services
  - EM Hub
  - Trainings, webinars

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IESO's Energy Manager Program

- 53 participating Energy Managers at time of evaluation
  - 1:1 EM to organization ratio
  - 84 EMs under contract in Interim Framework (2019-2021)
- Auto manufacturing, mining, commercial real estate, other manufacturing, universities
- Non-incented measures – O&M, lighting retrofits, lighting controls and scheduling, process upgrades, compressed air, HVAC, BAS

Impact Evaluation Approach

- Non-incented measures
- Census of 17 EMs
  - COVID-19 complications – fewer measures ready for review
  - 193 non-incented measures
- Historically impact evaluation was 90/10 sample
  - EM as sampling unit
  - Certainty stratum – total non-incented savings > 1,500 MWh
- Gross Impacts – detailed engineering review of each measure
- Net Impacts – free-ridership survey with program participants

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Impact Evaluation Approach - Details

- **Gross Impacts** – detailed engineering review of each measure
- **Net Impacts** – free-ridership survey with program participants
  - No spillover – program captures spillover as non-incented measures
- **Cost Effectiveness Analysis** – measure level CE aggregated to program and portfolio level
- **Greenhouse Gas Impacts** – measure-level energy savings load shapes and IESO-provided emissions factors
- **Job Impacts** – Statistics Canada's Input/Output Model

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Process Evaluation Approach

Data Collection

Energy Managers

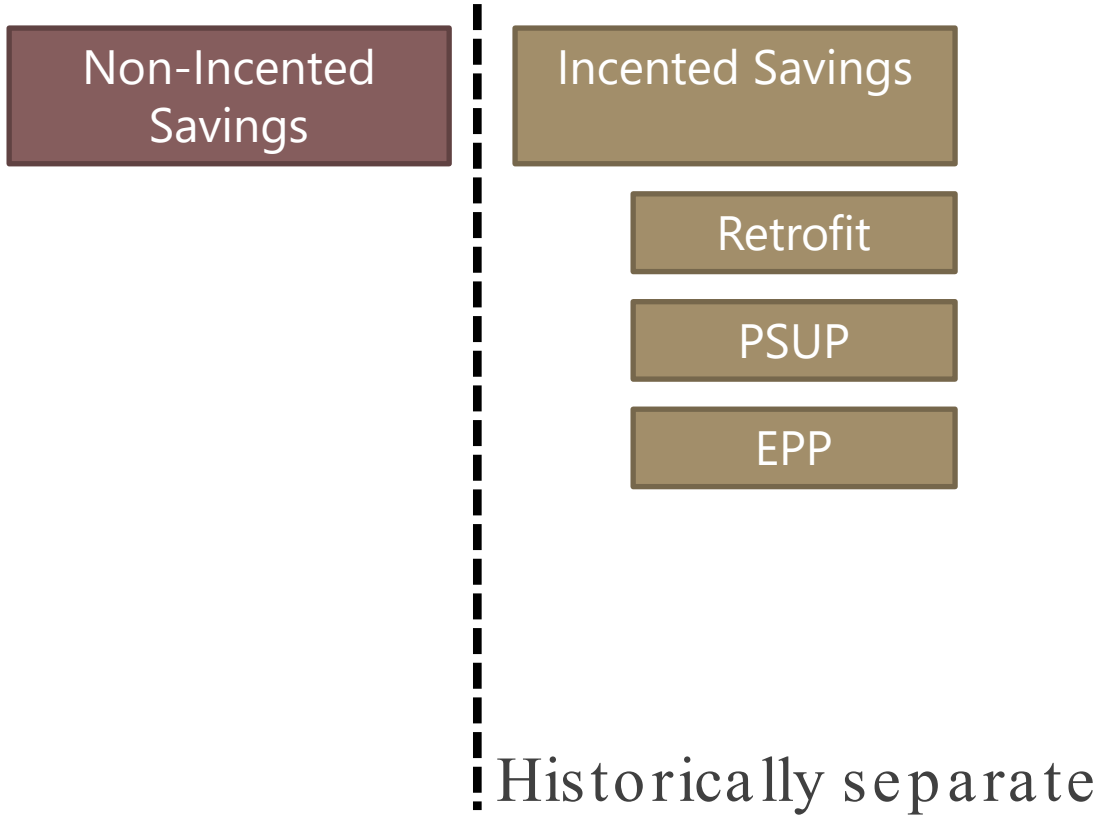
- In-depth Interviews
- Sample – 15 of 53 EMs under contract
- Topics
  - Program experience
  - M&V processes
  - Impacts beyond kWh
  - Perceived value to organization

Participating Organizations

- Mixed-mode survey
  - Online/Phone
- Sample – 17 organizations
- Topics
  - Program satisfaction
  - Support and training
  - Project decision-making
  - Value of EMs

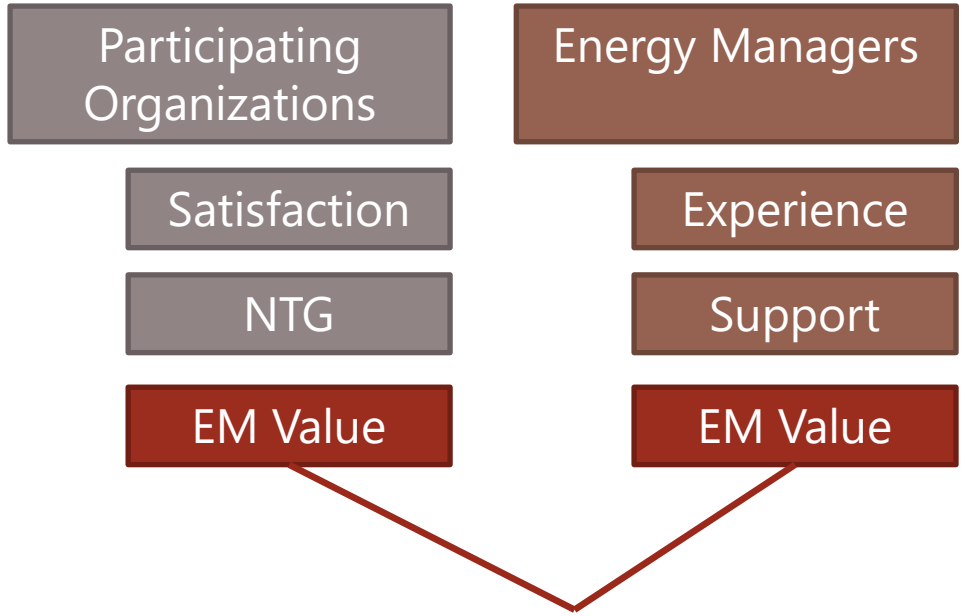
Holistic Evaluation of EM Impacts

Impact



Historically separate

Process



- Impacts on company culture
- Competitive advantage
- Savings beyond kWh

Impact Results

Electric Savings - 2020

Program	Energy Manager Reported Energy Savings (MWh)	Percent of Total PY2020 Program Energy Savings	Energy Manager Reported Peak Demand Savings (MW)	Percent of Total PY2020 Program Demand Savings
Retrofit	17,208	8%	5.64	16%
EM Non-Incented	6,469	100%	0.97	100%
PSUP	299	9%	-	NA
Total	23,970	11%	6.61	18%

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Impact Results

Electric Savings - 2021

Program	Energy Manager Reported Energy Savings (MWh)	Percent of Total PY2020 Program Energy Savings	Energy Manager Reported Summer Peak Demand Savings (MW)	Percent of Total PY2020 Program Demand Savings
Retrofit	36,695	8%	5.62	8%
EM Non-Incented	14,059	100%	1.92	100%
PSUP	3,856	34%	0.35	64%
EPP	741	51%	0.09	51%
Total	55,350	12%	7.98	11%

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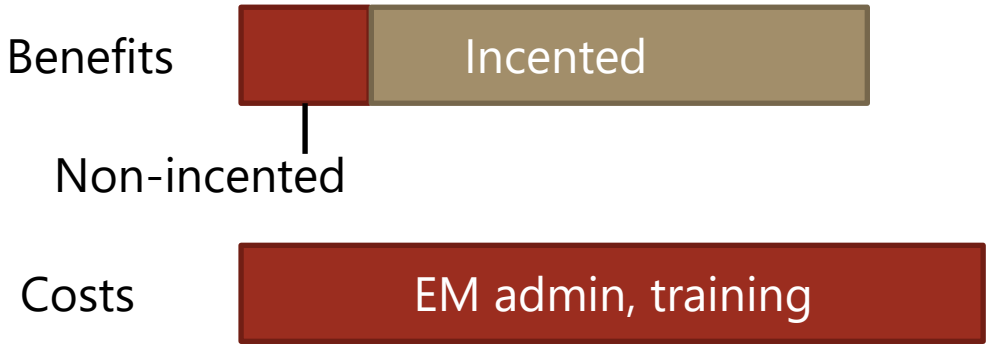
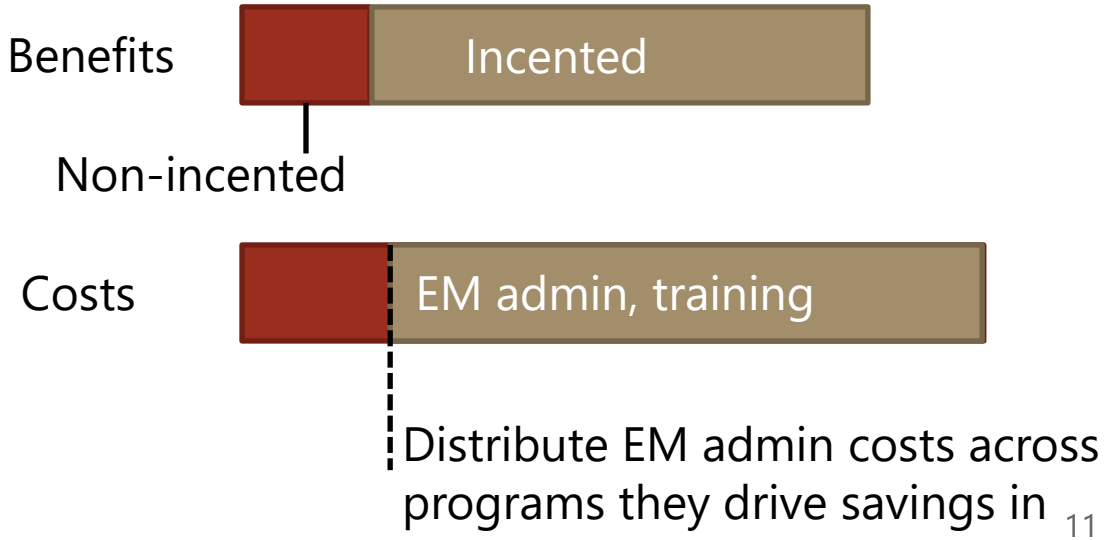
Cost Effectiveness Results

Program	TRC Costs	TRC Benefits	TRC Ratio	PAC Costs	PAC Benefits	PAC Ratio
Traditional CE	$3,867,573	$2,106,408	0.54	$1,323,056	$1,831,659	1.38
Alternative CE	$2,901,589	$2,106,408	0.73	$357,071	$1,831,659	5.13

Traditional CE



Alternative CE



EM's Value to their Organizations

Participant Perspective

- Full-time resource dedicated to energy management and project implementation
- Energy and cost savings
- EE in planning process, maintenance
- Improved energy data collection and analysis
- Develop corporate energy management and conservation plans
- Behavioral changes
- NTG Ratio – 91%, EMs were key players in project identification, planning, and implementation

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EM's Value to their Organizations

EM Perspective

- 12 out of 15 actively identify water and fossil fuel savings
- Drive change in organizational thinking – EE is a resource

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Conclusions

Energy Managers can be a resource multiplier

Investigate broader impacts of investments

Develop reporting systems to track broader impacts

Future research – long term impacts

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Questions?

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