



SMART ENERGY COMMUNITIES BENCHMARK

Webinar | March 23, 2020



SPEAKERS AND ORGANIZERS



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ABOUT QUEST



QUEST is a national NGO that works to accelerate efficient, integrated, and localized energy systems, by commissioning research; communicating best practices; and convening governments, utilities, and private sector leaders.

TODAY'S AGENDA

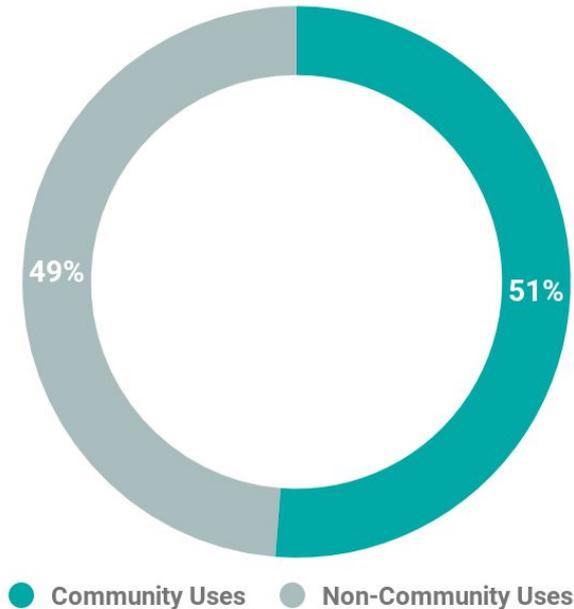
1. Introduction to Smart Energy Communities
2. Why we developed a Benchmark Tool
3. How we developed the Benchmark Tool
4. What we learned
5. How to get involved!

*We'll pause for Q&A after each section.
Please submit your question in the
"chat" view on Zoom.*



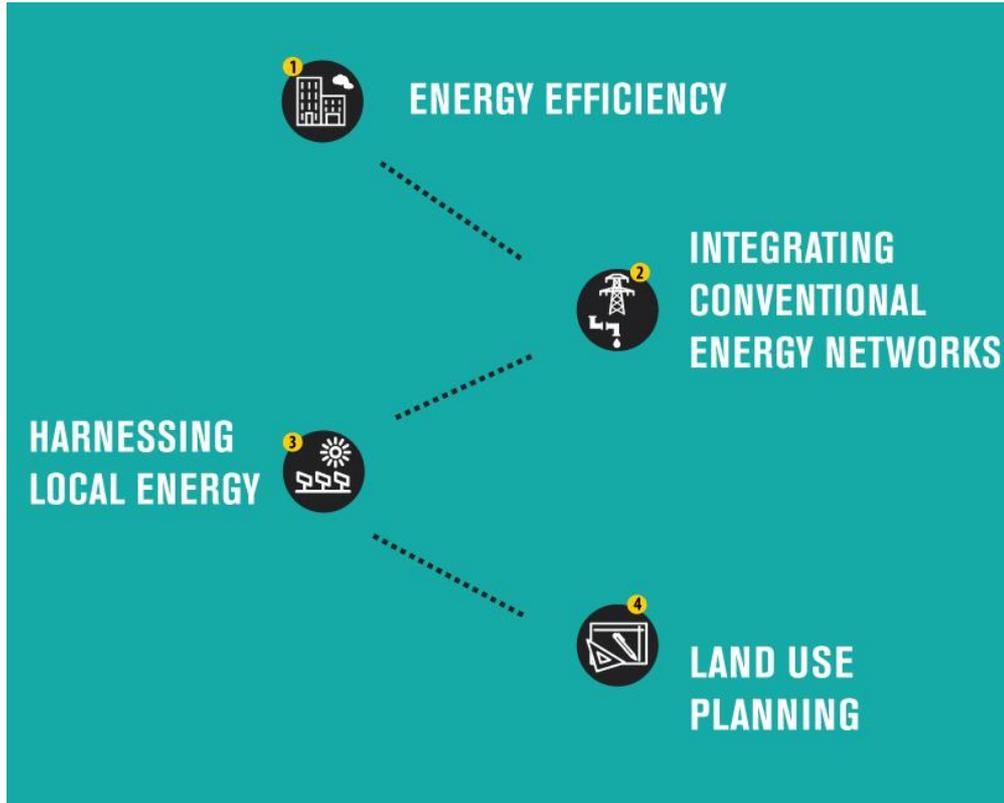
ENERGY USE AND SPENDING IN COMMUNITIES

**GHG Emissions in Canada
from Community Uses (2016)**



Community Size by Population	Average Annual Energy Spending
Small (less than 20,000)	Up to \$80 million
Mid-sized (20,000 - 100,000)	\$60 - \$400 million
Large (100,000 - 3 million)	\$200 - \$10 billion

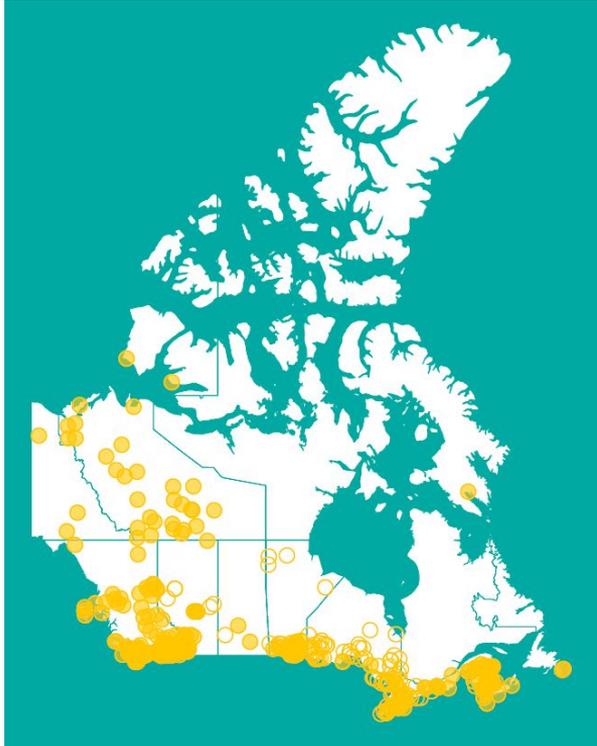
ABOUT SMART ENERGY COMMUNITIES



Smart Energy Communities represent the end state of a truly integrated approach to planning for and managing energy at the local level

[Video](#)

THE TRANSITION TO SMART ENERGY COMMUNITIES



- > Many communities have an energy plan but struggle with implementation
- > There is no standard practice for *Community Energy Planning*
- > There is no common understanding of what success looks like, or consensus on how to measure it



SMART ENERGY COMMUNITIES BENCHMARK

Why a Benchmark?

- Proven tools that help evaluate progress and identify pathways forward
- Enable continuous improvement
- Successful model in the USA

Pilot Project Goals

- Clarify what it means to be a Smart Energy Community and the process of becoming one
- Create a tool that communities can use to benchmark and track their progress using Canadian research and best practices
- Create a database of success stories



SMART ENERGY COMMUNITIES BENCHMARK

BREAK FOR Q&A



METHODOLOGY: WHAT & WHO WE ARE MEASURING

> **What** - “Practice”: Processes, policies, projects, programs

Implementation-Focused - Looking at initiative implementation, and the factors underlying implementation

> **Who** - Groups who have influence over the above, primarily municipal governments and utilities, but also broader public sector, civil society, private sector

Community-Wide - Looking beyond local government initiatives in the community, to consider utilities and actions undertaken by other organizations



METHODOLOGY: OTHER DESIGN CONSIDERATIONS

- > **Accessible** - Applicable and flexible to varying community contexts (size, location, energy mix, demographics, infrastructure)
- > **Pragmatic** - Clear actions associated with various measures
- > **Realistic** - A balance between leading actions and 'low hanging fruit'
- > **Collaborative** - Developed collaboratively with feedback from 17 technical advisors and 9 Pilot Communities



METHODOLOGY: CONCEPTUAL MODEL

COMMUNITY ENERGY BENEFITS & OUTCOMES

Why do communities choose to plan for and manage energy?

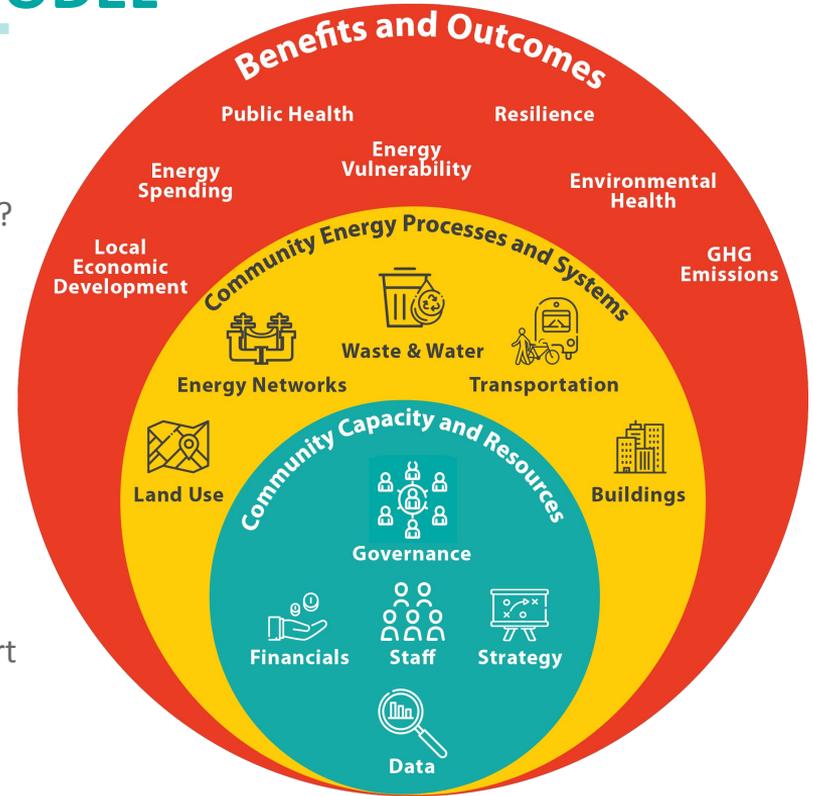
The focus of the Benchmark:

COMMUNITY ENERGY PROCESSES & SYSTEMS

How can energy systems be shaped through initiatives - policies, programs or projects - to lead to benefits?

COMMUNITY CAPACITY & RESOURCES

What are the underlying processes and practices that support the implementation of initiatives?



METHODOLOGY: SCORING APPROACHES

> Every **Indicator** has between 5-10 **Measures**

> **Measures** are scored through *scales* and *checklists*:

Scales were used when measures would likely be completed in a progression (e.g. study, pilot, implementation)

Checklists were used when measures had non-ordinal components (e.g. various aspects of a CEP)

> Measures may be removed from the assessment if they are deemed not applicable to the community context



SMART ENERGY COMMUNITIES BENCHMARK

BREAK FOR Q&A



INDICATORS FOR COMMUNITY CAPACITY & RESOURCES



Governance - Governance models support cross-sector leadership



Staff - Staff capacity is in place



Data - Information and data is available to support decision making and accountability



Financials - Funding and financial mechanisms support local energy objectives



Strategy - Community energy planning is structured to support implementation

INDICATORS FOR COMMUNITY CAPACITY & RESOURCES



Governance - Governance models support cross-sector leadership

Measures:

- Presence of a cross-sectoral leadership team
- Cross-departmental mandate and collaboration within local government and utility(ies)
- Knowledge sharing with other communities



INDICATORS FOR COMMUNITY CAPACITY & RESOURCES



Governance - Governance models support cross-sector leadership



Pilot Example: Calgary Climate Panel

- Collaboration between industry (including ENMAX and ATCO Gas), community and The City
- Members actively implement own actions
- Meetings occur regularly
- City acts as secretariat
- <https://www.calgary.ca/UEP/ESM/Pages/Energy-Savings/Climate-Change.aspx#panel>

INDICATORS FOR COMMUNITY CAPACITY & RESOURCES



Staff - Staff capacity is in place

Measures:

- Dedicated staff at local government and utility(ies)
- Support for ongoing staff education
- Succession planning

Pilot Example: Energize Bridgewater Team

- Dedicated local government team of >3 FTE staff overseeing the Community Energy Investment Plan
- <https://www.bridgewater.ca/town-services/planning/strategic-initiatives/bridgewater-smart-cities>



INDICATORS FOR COMMUNITY CAPACITY & RESOURCES



Data - Information and data is available to support decision making and accountability

Measures:

- Data sharing request processing by utility(ies)
- Community-level and corporate monitoring/reporting by local governments and utility(ies)
- Local climate hazard assessments
- Energy mapping and modelling for engagement

Pilot Example: London Community Energy Use & Greenhouse Gas Emissions Inventory

- Detailed breakdown of annual energy use from multiple sectors
- Supported by NDA between City and London Hydro for sharing annual inventory data.
- https://www.london.ca/residents/Environment/Energy/Documents/2018_Inventory_Report.pdf

INDICATORS FOR COMMUNITY CAPACITY & RESOURCES



Financials - Funding and financial mechanisms support local energy objectives

Measures:

- Assessments of financial mechanisms and funding
- Funding for local government-corporate energy initiatives
- Funding / levers for active transportation infrastructure and compact forms of development
- Programs, incentives and mechanisms for energy efficiency in new and existing buildings
- Programs specifically targeting low income households or energy poverty

Pilot Example: Bridgewater Community Energy Investment Plan Scoping Study

- Scoping study assessing different ownership structures, finance vehicles, and contract types for community energy initiatives.
- Ties into plan centrally focused on reducing energy poverty.
- <https://www.bridgewater.ca/document-library/sustainability/sustainable-bridgewater/1738-community-energy-financing-mechanisms-scoping-study/file>

INDICATORS FOR COMMUNITY CAPACITY & RESOURCES



Strategy - Community energy planning is structured to support implementation

Measures:

- Community engagement and economic analyses for CEP
- Clarity of CEP and actions within them
- Integration of land use, waste and water, and socio-economic considerations
- Establishment of community energy planning as an ongoing process



Pilot Example: *Campbell River Community Energy & Emissions Plan*

- Revision of the 2011 CEEP; includes reporting on past progress, and SMART actions focused on implementation
- [https://www.campbellriver.ca/docs/default-source/Document-Library/plans/2016-campbell-river-revised-cep-\(v-2\)---final.pdf?sfvrsn=33976008_6](https://www.campbellriver.ca/docs/default-source/Document-Library/plans/2016-campbell-river-revised-cep-(v-2)---final.pdf?sfvrsn=33976008_6)

INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Land Use - Land use planning supports energy and climate resilience objectives



Energy Networks - Energy delivery systems are optimized to improve efficiency, ensure reliability, and local energy integration



Waste & Water - Water and waste management promotes conservation, energy efficiency, and energy recovery



Transportation - Mobility and fleet planning prioritizes active transportation, public transportation, and alternative fuel use



Buildings - Buildings are efficient and incorporate local energy options

INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Land Use - Land use planning supports energy and climate resilience objectives

Measures:

- Public engagement and education on energy and land use
- Policies to promote compact, mixed use development, and energy efficiency in new buildings and developments
- Policies to preserve natural assets and manage microclimates through greenspace enhancement and urban heat island effect mitigation

Pilot Example: Beaconsfield public engagement

- Voluntary information sessions, open houses, and advisory committees to discuss and determine how to address land and energy use issues
- Coordination using bciti online platform
- https://www.beaconsfield.ca/images/stories/urban-fields/rapport_-final_-20160607_en_final.pdf

INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Energy Networks - Energy delivery systems are optimized to improve efficiency, ensure reliability, and local energy integration

Measures:

- Public engagement and education on energy networks
- Load management by utilities to address peak demand
- Integration of climate risk management into utility operations
- Use and integration of power to gas, district energy, and smartgrid infrastructure and technologies

Pilot Example: Alectra's Drive for the Workplace in Markham

- Program to install and integrate electric vehicle charging stations in Markham, owned and operated by Alectra
- <https://www.markham.ca/wps/portal/home/about/sustainability/community-sustainability-plan/alectra-drive-for-workplace>



INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Waste & Water - Water and waste management promotes conservation, energy efficiency, and energy recovery

Measures:

- Public engagement and education on water and waste systems
- Use of energy recovery, and waste reduction initiatives
- Conservation and efficiency initiatives for water and wastewater
- Stormwater management

INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Waste & Water - Water and waste management promotes conservation, energy efficiency, and energy recovery

Pilot Example: Yellowknife Strategic Waste Management Plan

- Directly linked to the Yellowknife Community Energy Plan
- Extensive public engagement and waste reduction initiatives (including 'YKEA' salvage area)
- https://www.yellowknife.ca/en/living-here/resources/Garbage/2018-Resources/DOCS-519171-v1-STRATEGIC_WASTE_MANAGEMENT_PLAN_-_FINAL_VER_SION_-_UPDATED_MAY_7_2018_WITH_CORRECT_APPENDICES.pdf



INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Transportation - Mobility and fleet planning prioritizes active transportation, public transportation, and alternative fuel use

Measures:

- Public engagement and education promoting active transportation and public transit
- Incorporation of active transportation into transportation planning
- Infrastructure and services supporting transportation demand management (active transportation, carpooling, public transit)
- Local government and utility(ies) leadership in alternative fuel vehicle use

INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Transportation - Mobility and fleet planning prioritizes active transportation, public transportation, and alternative fuel use

Pilot Example: Grande Prairie electric buses

- Charged using solar PV array
- Maintenance cost savings as well as emissions reductions
- <https://everythinggp.com/2019/02/13/electric-buses-coming-to-grande-prairie/>



INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Buildings - Buildings are efficient and incorporate local energy options

Measures:

- Public engagement and education on energy conservation and efficiency targeted to both single family residential and other types of buildings
- Local government, utility, public sector organization, and private sector leadership in buildings through energy efficiency retrofitting, high performance new construction, use of local and/or renewable energy sources, and benchmarking, labelling and disclosure of energy use

INDICATORS FOR COMMUNITY ENERGY PROCESSES & SYSTEMS



Buildings - Buildings are efficient and incorporate local energy options

Pilot Example: Inuvik Building Monitoring System

- Real-time, public reporting of town-owned facility data, including electricity and fuel use and energy costs
- <https://www.inuvik.ca/en/living-here/building-energy-monitoring-system.asp>



BENCHMARKING PILOT COMMUNITIES



BENCHMARKING PILOT COMMUNITIES

Pilot Communities:

- Beaconsfield, QC | Bridgewater, NS | Calgary, AB | Campbell River, BC | Grande Prairie, AB | Inuvik, NT | London, ON | Markham, ON | Yellowknife, NT

Process:

- Desktop research
 - CEPs and other program, policies and planning documents
- Interviews and information requests
- Meetings and workshops



BENCHMARKING PILOT COMMUNITIES



YELLOWKNIFE, NWT

TOTAL SCORE: 57%

The Smart Energy Community Benchmarking results show your community's progress on ten key indicators. We've assessed how your municipal and utility processes, policies, programs, and projects compare to smart energy best practices across Canada. Smart Energy Communities benefit from new opportunities for local economic development, lower energy costs, a cleaner environment, and improved community resilience.



COMMUNITY CAPACITY & RESOURCES

Governance models support cross-sector leadership

83%

HIGHLIGHTS - Yellowknife's multi-sectoral CEP Committee provides an advisory role to community energy initiatives. Initiatives are supported by a clear internal mandate at the City and are seen as a strategic priority within Northland Utilities.

OPPORTUNITIES - The City may consider restructuring the committee to encourage implementation of actions by represented organizations. Additionally, the committee may consider expanding representation to include the Yellowknives Dene First Nation and public transit officials.

Staff capacity is in place to support local energy initiatives

56%

HIGHLIGHTS - Northland Utilities has a dedicated point of contact who is a member of the CEP Committee. Additionally, City staff involved in community energy initiatives participate in extensive education and training. This also includes building inspectors who have been educated through energy-related task exercises.

OPPORTUNITIES - The City may consider developing a succession plan to ensure there is sufficient staffing to oversee community energy initiatives, as at the time of scoring the City had less than 1 FTE responsible. Additionally, Northland Utilities could prioritize staff education and training, and establish a succession plan, to optimize participation in the CEP Committee.

Information and data is available to support decision making and accountability

62%

HIGHLIGHTS - Energy and emissions inventories for the community and City have been completed with established targets. The review and renewal frequency of the inventories are clearly defined. Northland Utilities reports to the Canadian Electricity Association, and releases an annual sustainability report.

OPPORTUNITIES - Northland Utilities could establish a process for data sharing, beyond the current ad hoc approach, to reduce recurring requests to provide community energy planning information on an ongoing basis. Additionally, Northland Utilities could conduct more detailed corporate sustainability reporting to highlight successes and progress that are specific to Northland Utilities.

Funding and financial mechanisms support local energy initiatives

74%

HIGHLIGHTS - The City of Yellowknife offers tax abatements for LEED certified buildings and a variety of other development features that support densification, such as residential infill/renovation and brownfield remediation and development. Additionally, AEI provides a one-window approach to administer programs covering all building types including energy audits and incentives for deep energy efficiency retrofits.

OPPORTUNITIES - The City could collaborate with the Arctic Energy Alliance to develop repayment mechanisms for building retrofits to bridge the gap of capital costs not covered by existing incentives. There is also an opportunity to create programs targeted at low income households and/or those living in energy poverty.

Community energy planning is structured to support implementation

65%

HIGHLIGHTS - The City of Yellowknife's CEP was approved by Council in 2017 and includes actions related to land use, waste and water systems, and transportation (early assigned) to responsible departments. The CEP is set to be renewed at the end of the 10 year period it spans.

OPPORTUNITIES - The City can use the engagement that was proposed in the Smart Cities Challenge proposal to develop a CEP stakeholder engagement framework, and expand engagement so it is conducted on an ongoing basis.

1.3 DONNÉES

SCORE DE LA COLLECTIVITÉ: 10 / 24,5

1.3.1A. ENGAGEMENT DU SERVICE PUBLIC D'ÉLECTRICITÉ À PARTAGER LES DONNÉES

Notation : Échelle

Un **processus normalisé** est en place pour demander et partager les données, dont les personnes-ressources appropriées, les documents de demande et de communication, ainsi que les échéances estimées. [3 points]



Un **format normalisé** des données énergétiques communautaires a été établi pour le partage des données. [2 points]



Les demandes de données et d'information font l'objet d'un suivi **ad hoc**. [1 point]



Il a été mentionné dans une entrevue qu'Hydro-Québec a un processus pour répondre aux demandes de données provenant des administrations locales, par sa division des clients d'affaires, ce qui a été confirmé par la Ville de Beaconsfield.

1.3.2A. INVENTAIRE ÉNERGÉTIQUE COMMUNAUTAIRE ET RAPPORTS

Notation : Liste de contrôle

Un **inventaire de base d'énergie ou de GES communautaire** a été réalisé, lequel comprend l'utilisation ou les émissions d'énergie ou de GES des clients résidentiels, institutionnels, commerciaux, industriels, ainsi que des secteurs du transport et des déchets solides. [1 point]



L'**inventaire communautaire est très détaillé**, comme l'organisation selon la typologie des bâtiments, le type de transport, les flux de déchets, et les autres utilisations applicables (comme l'agriculture, les changements d'utilisation des terres ou les procédés industriels). Cela peut aussi comprendre l'organisation selon les dépenses en énergie. [1 point]



Un **objectif a été établi et approuvé pour l'énergie communautaire ou les émissions de GES**. [1 point]



RESULTS FROM THE PILOT COMMUNITIES

Trends among Measures:

Overall there was generally at least one example of success in each measure

General Strengths:

- Public education for energy conservation and efficiency in single family housing
- Planning policies for active transportation, compact mixed-use development, natural lands

General Weaknesses:

- Assessing financial mechanisms
- Energy-focused planning policies for new developments



RESULTS FROM THE PILOT COMMUNITIES

Overall Trends and Insights:

- *Staff* tended to be the lowest scored indicator
- *Transportation* tended to be the highest scored indicator
- *Energy Networks* and *Financials* tended to be the most variable indicators
- Each community has a unique approach and opportunities that are specific to its own context



SMART ENERGY COMMUNITIES BENCHMARK

BREAK FOR Q&A



BEYOND THE PILOT

Next Steps for QUEST and Pollution Probe:

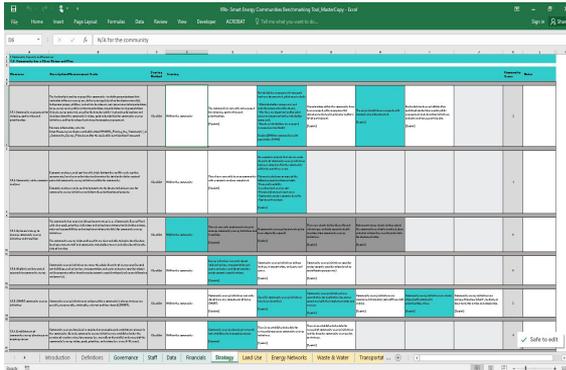
- Continue to work with pilots and onboard new communities; goal is to do a benchmark assessment every two years
- Continuing to update the scoring framework itself as we learn more about what works and what doesn't
- Eventually add quantitative results to evaluate efficacy of community energy planning practice



HOW YOU CAN GET INVOLVED

DIY ROUTE

- Download our Self-Assessment Tool
- Website resources and best practices



The image shows a screenshot of a spreadsheet application, likely Microsoft Excel, displaying a self-assessment tool. The spreadsheet has a grid layout with multiple columns and rows. The top row is highlighted in blue. The columns are labeled with various categories, and the rows contain detailed text and numerical data. The spreadsheet is titled "Self-Assessment Tool" and is open in a window titled "Self-Assessment Tool - Microsoft Excel".

BENCHMARK PROGRAM

- 3rd Party Assessment and Report
- Collaborative Workshops
- Training and Mentorship
- Communications Material
- Website Feature





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