RII Market Characterization Survey: Controlled Environment Agriculture

Resource Innovation Institute (RII) and American Council for an Energy-Efficient Economy (ACEEE) are surveying controlled environment agriculture (CEA) subject matter experts to inform our three-year USDA-funded scope of work entitled, “Data-Driven Market Transformation for Sustainable, Efficient Controlled Environment Agriculture.” Our research will address a range of issues designed to inform our market transformation strategy, from the composition of the supply chain serving CEA producers to the sources of energy serving vertical and greenhouse cultivation facilities. We thank you for sharing your knowledge and request submission of your completed survey by Monday, May 17. We expect it to require 10-15 minutes of your time.

* Required

1. Name *

2. Company Affiliation *

3. 3) Which supply chain actors serve CEA operations for the following purchases?

Mark only one oval per row.

	Manufacturers	Manufacturer Sales Reps	Distributors	Independent Contractors/Installers	Small/Local Retailers
Electric Infrastructure					
Lighting Equipment					
HVAC Equipment					
Dehumidification Equipment					
Controls & Automation Equipment					
Water Management Systems					

4. 4) Rank these market actors in terms of their influence on the purchasing behaviors of CEA producers:

Mark only one oval per row.

	1	2	3	4	5	6	7	8
Facility staff	◯	◯	◯	◯	◯	◯	◯	◯
Technology manufacturers (e.g., lighting, HVAC)	◯	◯	◯	◯	◯	◯	◯	◯
Design & construction service providers (e.g., engineers, architects)	◯	◯	◯	◯	◯	◯	◯	◯
Distributors	◯	◯	◯	◯	◯	◯	◯	◯
Utilities	◯	◯	◯	◯	◯	◯	◯	◯
Trade associations	◯	◯	◯	◯	◯	◯	◯	◯
State departments of agriculture	◯	◯	◯	◯	◯	◯	◯	◯
Agricultural extension offices	◯	◯	◯	◯	◯	◯	◯	◯

5. 5) Which barriers to energy efficiency would you say are most important to address, with the goal of accelerating successful adoption of efficient technologies? [Select up to three (3)] *

Check all that apply.

- [ ] Upfront costs
- [ ] Lack of financing / Access to capital
- [ ] Executive support for trying something new
- [ ] General lack of knowledge of efficient technologies
- [ ] Cultivator training on how to effectively use technologies
- [ ] General uncertainty about product performance and/or energy savings claims
- [ ] Other: _____

6. 6a) Which types of producers are most open to energy efficiency projects? [Select up to four (4) Facilities Types and up to four (4) Crop Types.] *

Check all that apply.

- [ ] Facilities Types - Large indoor vertical
- [ ] Facilities Types - Small greenhouse (<10 acres)
- [ ] Facilities Types - Medium greenhouse (10-49 acres)
- [ ] Facilities Types - Large greenhouse (50+ acres)
- [ ] Facilities Types - Propagators
- [ ] Crop Types - Leafy greens (lettuce, spinach, herbs ...)
- [ ] Crop Types - Specialty greens (purslane, orach, , vegetable amaranth, tetragonia, celtuce ...)
- [ ] Crop Types - Vine crops (pumpkins, squash, watermelons, cucumbers ...)
- [ ] Crop Types - Fruits
- [ ] Crop Types - Floriculture (ornamentals, potted plants, foliage plants, cut flowers ...)
- [ ] Crop Types - Cole crops (broccoli, Brussels sprouts, cabbage, cauliflower, kale ...)
- [ ] Crop Types - Mushrooms
- [ ] Other: _____

7. 6b) Please help us understand why you made those selections in the previous question [6a] *

8. 7) Indoor Vertical Facilities - What sources of energy, including for backup power, are used by Indoor Vertical Facilities?

Check all that apply.

- [ ] Grid electricity
- [ ] On-site Solar
- [ ] Geothermal
- [ ] Natural Gas
- [ ] Propane
- [ ] Biofuels
- [ ] Co-gen / Microgrid
- [ ] Other: _____

9. 8) Greenhouse Facilities - What sources of energy, including for backup power, are used by Greenhouse Facilities

Check all that apply.

- [ ] Grid electricity
- [ ] On-site Solar
- [ ] Geothermal
- [ ] Natural Gas
- [ ] Propane
- [ ] Biofuels
- [ ] Co-gen / Microgrid
- [ ] Other: _____

10. 9) Which of the following appear to be the most valuable benefits realized by producers through implementation of efficiency projects and high performance technologies, generally across all crop and facility types? [Select up to three (3)] *

Check all that apply.

- [ ] CapEx savings
- [ ] OpEx savings
- [ ] Yield improvements
- [ ] Maintenance savings
- [ ] Quality expressions (e.g., color, taste, smell)
- [ ] Other: _____

11. 10) For our literature review, we've identified these publications as particularly helpful: a) Studies by leading universities (e.g., Wageningen, McGill, Utah State), b) California Energy Commission / Title 24 / CASE Report resources, c) IESO greenhouse energy profile study. To address our research questions, what other materials should we be reviewing to inform the market characterization report? *

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12. 11) In addition to published resources, are there specific experts you would recommend we interview? [Please provide names and contact information below.] *

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13. Is there anything else we should consider as we develop a strategy to transform the CEA market toward more efficient production?

Thank You!

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