

# **Cleantech Startup Growth Initiative and Manufacturing Corps Evaluation**

*Final Report*

Prepared for:

**New York State Energy Research and Development Authority**

Albany, New York

Patricia Gonzales, Ph.D.  
Senior Project Manager

Prepared by:

**Opinion Dynamics**

Waltham, Massachusetts

Ellen Steiner, Ph.D.  
Vice President

Jen Loomis, Ph.D.  
Principal Consultant

Natalie Fortman  
Consultant



## Notice

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# 1 Introduction

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The New York State Energy Research and Development Authority (NYSERDA) created the Cleantech Startup Growth and Manufacturing Corps (M-Corps) Initiatives to support the clean energy entrepreneurial ecosystem and accelerate the growth and scale of new businesses that serve the clean energy market in New York State. Cleantech Startup Growth and M-Corps are funded by the NYSEERDA's Clean Energy Fund (CEF).

A baseline report was completed in 2017 that documented metrics for the two initiatives. This report documents the updated performance metrics for the two initiatives over the period of 2018 to 2020.

## 1.1 The Cleantech Startup Growth Initiative

Between 2018 and 2020, six incubators in New York State (NYS) received funding from NYSEERDA through the Cleantech Startup Growth Initiative: (1) ACRE at New York University (NYU) Tandon School of Engineering; (2) Venture Creations at Rochester Institute of Technology (RIT); (3) Clean Energy Business Incubator Program (CEBIP) at Stony Brook University; (4) Clean Tech Center at The Tech Garden; (5) Southern Tier Clean Energy Incubator at Binghamton University; and (6) Launch NY Emerging Cleantech Opportunity Incubator.

The Cleantech Startup Growth Initiative targets incubators to:

- Accelerate the time to market for cleantech startups enrolled in the incubator programs.
- Deploy lessons learned and best practices to help incubators quickly address the needs of the startups enrolled in the incubator programs.
- Increase the ability of startup companies to raise seed and follow-on capital from investors and secure commercialization assistance from development partners.

## 1.2 The Manufacturing Corps Initiative

The M-Corps Initiative aims to increase private capital investment in manufacturing build-out and scale-up activities through a series of offerings geared toward overcoming obstacles associated with the manufacturing of clean energy products. At the time of this study, there are two entities administering the M-Corps Initiative: NextCorps, Inc. (doing business as Hardware ScaleUp) and SecondMuse.

Any manufacturing startup company can apply to participate in the M-Corps Initiative; they do not need to be part of the Cleantech Startup Growth Initiative.

### **1.3 Evaluation Objectives and Methods**

The primary objective of this study was to update indicators for the Cleantech Startup Growth and M-Corps Initiatives. To meet the evaluation objectives, the research team conducted:

- An online survey with cleantech startups enrolled in the incubator programs and/or the M-Corps program. (The team refers to this group as participants, participating incubator client companies, or client companies. It includes both current incubator clients and graduates.) A total of 48 of 115 cleantech companies responded to the survey for a response rate of 42%, and 15 of 42 M-Corps companies responded for a response rate of 36%. Twenty-one of the M-Corps companies were also at an incubator.
- An online survey with cleantech startups who were *not* enrolled in the incubator programs and had *not* received NYSERDA support in the past. (The team refers to this group as non-participants or non-participating cleantech companies.) A total of 14 of 94 non-participating cleantech companies responded to the survey for a response rate of 15% and 3 of 71 non-participating M-Corps companies answered the survey for a response rate of 4%.
- In-depth telephone interviews with staff at each of the six NYSERDA-sponsored incubators and with staff at both M-Corp Administrators (Admins).
- A thorough review of Cleantech Startup Growth and M-Corps program data and secondary data sources.

Table 1 summarizes the objectives of this study and research methods used to meet those objectives.



## Cleantech Startup Growth Initiative and Manufacturing Corps Evaluation

**Table 1. Evaluation Objectives and Main Research Questions**

Objective	Evaluation Question(s)	Data Sources & Analytic Methods
<b>Cleantech Startup Growth</b>		
Cleantech commercialization process	<ul style="list-style-type: none"> <li>▪ How many products developed by NY cleantech start-up companies were commercialized in 2018–2020?</li> <li>▪ What was the revenue generated from the above-mentioned commercialized products in total and in NYS?</li> </ul>	Surveys of cleantech companies, program records
Private investment (private and follow-on capital and program funding) leveraged by the incubators through sponsors other than NYSERDA	<ul style="list-style-type: none"> <li>▪ What is the dollar amount of funding (private and follow-on capital and program funding) from other sponsors leveraged by the incubators?</li> </ul>	Interviews with cleantech Incubator staff, program records
Impact of support provided by the Incubator and/or Ignition grants programs to client companies and graduates including improved position for the client company and graduates	<ul style="list-style-type: none"> <li>▪ Number of partnerships formed</li> <li>▪ How many (number of) deals made/completed within a specified timeframe (e.g., 2018–2020)?</li> <li>▪ What is the dollar value of investments raised by the incubator client companies and graduates?</li> <li>▪ Number of customer agreements executed</li> <li>▪ How long does it take (amount of time, in months) for products developed by non-participant and client companies to get to the market?</li> <li>▪ What is the dollar value of follow-on capital raised by client companies?</li> <li>▪ How long does it take (amount of time, in months) for products developed by non-participant and client companies to get to the first customer/end-user?</li> </ul>	Surveys of cleantech companies, program records, Social Network Analysis (SNA)
Incubator operations and performance	<ul style="list-style-type: none"> <li>▪ What is the dollar value of sponsorship funding leveraged by the incubators?</li> <li>▪ How many (number of) valuable leads (e.g., high-value service providers, mentors, and other key stakeholders) are provided by incubators to their client companies?</li> <li>▪ What are some in kind (non-dollar) goods or services provided by sponsors to the incubators?</li> </ul>	Interviews with cleantech Incubator staff, program records
Exits or liquidity events (mergers and acquisitions, outright sale, initial public offering, private placement, etc.) realized by participant companies	<ul style="list-style-type: none"> <li>▪ How many companies realized exits or liquidity events in 2018–2020?</li> </ul>	Cleantech companies, program records

**Cleantech Startup Growth Initiative and Manufacturing Corps Evaluation**

Objective	Evaluation Question(s)	Data Sources & Analytic Methods
<b>M-Corps</b>		
Cleantech manufacturing process	<ul style="list-style-type: none"> <li>▪ How many Cleantech products were manufactured in total and in NYS in 2018–2020?</li> <li>▪ What was the revenue generated by Cleantech companies and manufacturing partners from the above mentioned cleantech products?</li> </ul>	Surveys of cleantech companies, program records, interviews with M-Corps Admins
Value and impact of manufacturing services provided to cleantech companies (regarding when and how to engage with manufactures and begin the process of going through early manufacturing activities)	<ul style="list-style-type: none"> <li>▪ How many agreements between engaged cleantech startup companies and private capital investors and/or strategic corporate partnerships were signed in 2018–2020?</li> <li>▪ What is the dollar and non-dollar value of services and money provided by market actors?</li> <li>▪ How long does it take (amount of time, in months?) for products developed by cleantech companies to get to the first customer/end-user?</li> </ul>	Surveys of cleantech companies, program records, interviews with M-Corps admins, SNA

## 2 Initiative Outcomes and Performance Indicators

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Table 2 and Table 3 provide a summary of the evaluation team’s estimates of the 2018-2020 outcomes indicators for the Cleantech Startup Growth and M-Corps Initiatives. The Tables present population estimates. The weighting scheme the team used to estimate the population metrics from the sample can be found in Appendix A. Other details of the team’s analysis methods can be found in Section 4.4. The baseline data is from a 2017 survey conducted as part of the Cleantech Startup Growth and M-Corps Initiatives Baseline research.

**Cleantech Startup Growth Initiative and Manufacturing Corps Evaluation**

**Table 2. Cleantech Startup Growth Outputs, Outcomes, and Indicators Summary**

<b>Outputs/Outcomes</b>	<b>Indicators</b>	<b>Data Source <sup>a</sup></b>	<b>Baseline <sup>b</sup></b>	<b>2018–2020 Estimate by Group</b>
Product commercialization	Number of products commercialized	3,4	Participants: 66 Non- participants: 214	Participants: 31 Non-participants: 81
Investor Agreements Executed	Number of investor agreements executed	2,3	N/A	Participants: 95 Non-participants: 125
Corporate and Strategic Partnerships Formed	Number of partnerships formed	2,3	N/A	Participants: 579 Non-participants: 495
Customer Agreements Executed	Number of customer agreements executed	2,3	N/A	Participants: 5,304 Non-participants: 2,699
Revenue (new commercial products and products that have been commercialized) <sup>d</sup>	Dollar revenue generated by cleantech startups in total and in NYS	3,4	\$45 million <i>Note: Participant specific indicator</i>	In total Participants: \$115 million Non-participants: \$318 million <sup>f</sup>
				In NYS Participants: \$66 million Non-participants: \$196 million
Private investment (private and follow-on capital and program funding leveraged by the incubators through sponsors other than NYSERDA) <sup>e</sup>	Private investment – participating client companies	3,4	\$103 - \$141 million <sup>g</sup>	Participants raised: \$301 million <i>Note: Participant specific indicator</i>
	Dollar amount of program funding from other sponsors leveraged by incubators	4	\$1.3 million from other sponsors	NYSERDA-sponsored incubators received \$2.2 million from other sponsors <i>Note: Participant specific indicator</i>
Continued investment in the incubator program will maintain the historical investment leverage levels of incubator client companies and graduates and improve the position of client companies and graduates	Increase in dollar amount [private and follow-on capital] raised by the client companies & graduates	2,3,4	Participants: \$103– \$141 million Non-participants: \$176– \$225 million <sup>c</sup>	Participants raised: \$415 million Non-participants raised: \$173 million <i>Note: This includes private funding only</i>
	Increase in the number of deals	2,3	Participants: 90–91 Non-participants: 37	Participants made 2,690 more deals than non-participants Participant deals: 5,884

### Cleantech Startup Growth Initiative and Manufacturing Corps Evaluation

				Non-participant deals: 3,194
	Decrease in time to market for client companies	2,3	Participants: 29 months to market Non-participants: 57 months to market	Participants were 3.8 times faster than non-participants to bring product to market Participants: 27 months, on average, to bring product to market Non-participants: 102
Highly targeted and timely infusions of capital through the ignition grants program will better position incubator client companies to attract follow-on capital from investors and/or secure commercialization support from development partners as well as improve the position of client companies	Dollar value of capital provided by the ignition grants	2	\$0 <i>Note: Initiative was not launched during the baseline period</i>	Participants: \$1.7 million
	Dollar value of follow-on capital raised by client companies	2,3	Participants: \$22–\$23 million Non-participants: \$49 million	Participants: \$113 million Non-participants: \$1.5 million
	Decrease in Time to first customer/end-user for qualified cleantech companies	2,3	Participants: 30 months to customer Non-participants: 76 months to customer	Participants were 1.4 times faster than non-participants to reach their first customer Participants: 26 months, on average Non-participants: 36 months, on average
High-performing incubators will be able to attract funding from other sponsors to help sustain their operations and programs while retaining a focus on NYSERDA’s clean energy goals	Value of sponsorship funding leveraged by the incubators	4	\$1.3 million	NYSERDA-sponsored incubators received \$2.2 million from other sponsors <i>Note: Participant specific indicator</i>
	Number of participating high-value service providers, mentors, and other stakeholders in the programming that incubators provide to client companies	1	300	390 incubator-affiliated stakeholders provided assistance <i>Note: Participant specific indicator</i>
Accelerate time-to-market for cleantech products	Decrease in time to market for cleantech products	2,3	N/A	Participants: 27 months Non-participants: 102 months
Cost share by market actors including services, equipment,	Dollar value provided by market actors to cleantech companies	3,4	N/A	Participants: \$327 million Non-participants: \$173 million

### Cleantech Startup Growth Initiative and Manufacturing Corps Evaluation

machine time, as well as cash cost share	(Note: Includes private and public funding)			
	Non-dollar value of services, equipment, and machine time provided by market actors to Cleantech companies		N/A	Participants: 4.3 services, on average Non-participants: 1.5 services, on average
Exits or liquidity events (mergers and acquisitions, outright sale, initial public offering, private placement, etc.) realized by participant companies	Number of companies that realized exits or liquidity events in 2018–2020	1	N/A	Participants: 5 <i>Note: Participant specific indicator</i>

- <sup>a</sup> Sources include: (1) incubator interviews, (2) participant survey, (3) non-participant survey, and (4) program data. The team used these sources to estimate and update the baseline values.
- <sup>b</sup> Research Into Action developed baseline estimates of several output indicators as part of their evaluation in 2018.
- <sup>c</sup> The team is unsure why there is range for this value. No reason was specified in the baseline report.
- <sup>d</sup> Revenue refers to revenue generated from new commercial products entering the market as well as products previously commercialized by incubator client companies and graduates.
- <sup>e</sup> Private Investment refers to private and follow-on capital raised by incubator client companies and graduates as well as the program funding leveraged by the incubators through sponsors other than NYSERDA.
- <sup>f</sup> Please note that this value is driven by one non-participant’s answer, which when weighted, totals \$300 million.
- <sup>g</sup> The lower estimate of \$103 million is based on program data, while the higher estimate of \$141 million is based on survey data that included an outlier.

The evaluation team also developed updated estimates for key metrics using interviews with M-Corps Admins, participating M-Corps client companies, and non-participating companies involved in manufacturing. The estimates are weighted from the sample to the population. The weighting scheme can be found in Appendix A.

**Table 3. M-Corps Outputs, Outcomes, and Indicators Summary**

Outputs/Outcomes	Indicators	Data Source <sup>a</sup>	Baseline	2018-2020 Estimate by Group
Products manufactured in total	Number of products manufactured in total	3,4	Participants: 23 Non-participants: 198	Participants: 41 Non-participants: 91
Agreements signed to invest in cleantech startup companies	Number of agreements signed to invest in cleantech startup companies	2,3	Participants: 48 Non-participants: 22	Participant deals: 5 Non-participant deals: 19

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Products manufactured in NYS	Number of products manufactured in NYS	1,3	Participants:12 Non-participants: 117	Participants: 14 Non-participants: 69
Accelerate time-to-market for cleantech products	Decrease in time to manufacturing for cleantech products	2,3	Participants: 26 months Non-participants: 68 months	Participants were 2.5 times faster than non-participants to bring product to manufacturing-stage Participants: 17 months, on average Non-participants: 68 months, on average
Revenue generated by cleantech companies producing cleantech products	Dollar revenue generated by cleantech companies producing cleantech products	2,3	\$7.9 million	M-Corps participants: \$16 million Non-participants: \$1.0 million
Revenue generated by manufacturing partners producing cleantech products	Dollar revenue generated by manufacturing partners producing cleantech products	<i>No data</i>	Not estimated	<i>Not estimated<sup>b</sup></i>

<sup>a</sup> Sources include: (1) incubator interviews, (2) participant survey, (3) non-participant survey, and (4) program data. The team used these sources to estimate and update the original CEF baseline values.

<sup>b</sup> Estimation of this metric would have required a significant, separate data collection effort to query all of the manufacturing partners. Additionally, it would have been difficult for the manufacturing partners to quantify revenue generated from M-Corps participants’ products separately from their other revenue.

## 2.1 Incubator and M-Corps Administrator Participation

Per program documentation, six clean energy incubators in New York State received funding from NYSERDA between 2018 and 2020. Incubators commonly offer services such as office or lab space, assistance with business plans, access to mentors or other experts, marketing services, and more. Table 4 shows that each incubator serves a specific region in NYS and offers varying services to their client companies.

**Table 4. Participant NYS Cleantech Startup Growth Incubators Summary**

<b>NYSERDA- Sponsored Incubators</b>	<b>Region</b>	<b>Services</b>
ACRE at NYU Tandon School of Engineering	New York City	Office/Lab space; Business plan, funding, and accounting help; Mentoring; Legal services; Marketing and design services; Funded internships; Networking or educational events
Venture Creations at RIT	Finger Lakes	Office/Lab space; Business plan help; Funding connections (introductions); Access to student talent and RIT resources
CEBIP at Stony Brook University	Long Island	Office/Lab space; Business plan help; Mentoring; Funding connections (introductions); Training
Clean Tech Center at The Tech Garden	Central New York	Mentoring; Business plan, tech, or funding help; Funding connections (introductions); Networking or educational events; Training
Southern Tier Clean Energy Incubator at Binghamton University	Southern Tier	Office/Lab space; Business plan help; Internships; Educational events; Access to expertise at the University
Launch NY Emerging Cleantech Opportunity (ECO) Incubator	Western New York	Mentoring; Business plan and funding assistance; Networking or educational events

Sources: Incubator interviews, program documentation, and incubator websites.

From program records, the research team identified 143 current, graduated, or terminated incubator client companies that received services from one or more of the six NYSERDA-sponsored incubators between 2018 and 2020 (Table 5). Current companies were active participants at a NYSERDA-sponsored incubator at the time of the survey; graduated clients had accomplished their goals and graduated from the incubator, while terminated companies were making inadequate progress toward their goals and their participation had ended. Two active companies in the program data were each listed under two different incubators, which is why the total number of companies is shown as 145 in Table 5.



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The six NYSERDA-sponsored incubators exhibit different proportions of graduated and terminated client companies. This variability is expected because incubators function in different geographic regions and under different market and economic conditions. A total of 115 active and graduated client companies were invited to take the participant survey. Surveys were completed by 48 client companies and responses were weighted to represent the total of 115 active and graduated client companies.

**Table 5. Incubator Participation, by Participant Status**

NYSERDA-Sponsored Incubator	Client Company Status								
	Current Client		Graduated		Terminated		Total		Percent of Client Companies terminated
	#	%	#	%	#	%	#	%	
CenterState CEO	11	11%	0	0%	3	11%	14	10%	21%
Launch NY	22	21%	1	8%	2	7%	25	17%	8%
Long Island High Technology Incubator	13	13%	0	0%	11	39%	24	17%	46%
New York University Incubator	17	16%	11	85%	4	14%	32	22%	13%
RIT Clean Energy Incubator	18	17%	0	3%	5	18%	23	16%	22%
Southern Tier Clean Energy Incubator	23	22%	1	8%	3	11%	27	19%	11%
<b>Total</b>	<b>104</b>	<b>100%</b>	<b>13</b>	<b>100%</b>	<b>28</b>	<b>100%</b>	<b>145</b>	<b>100%</b>	<b>19%</b>

NYSERDA also sponsors two M-Corps Admins that assist startups with manufacturing their cleantech products: NextCorps, which does business as Hardware ScaleUp and SecondMuse. The M-Corps Admins assist client companies with defining goals and developing a roadmap to bring cleantech prototypes to mass production. The Admins provide education, networking opportunities, resources, and industry experts to help the client companies accomplish their goals. The admins also provide accountability to client companies and expert advisors they would not otherwise have access to. A total of 42 active and graduated M-Corps client companies were invited to take the participant survey. Surveys were completed by 15 participant M-Corps companies and responses were weighted to represent this population.

**Table 6. M-Corps Participation, by Participant Status**

NYSERDA- M-Corps Admin	Client Company Status								Percent of Client Companies terminated
	Current Client		Graduated		Terminated		Total		
	#	%	#	%	#	%	#	%	
Hardware Scaleup	16	46%	0	0%	1	100%	17	40%	2%
SecondMuse	19	54%	7	100%	0	7%	26	60%	0%
<b>Total</b>	<b>35</b>	<b>100%</b>	<b>7</b>	<b>100%</b>	<b>1</b>	<b>100%</b>	<b>43</b>	<b>100%</b>	<b>2%</b>

## 2.2 Cleantech and M-Corps Products, Revenue, and Investment

This and subsequent sections document the analyses and estimated values for the indicators.

### 2.2.1 Products Commercialized and Manufactured

The evaluation team estimates that the 115 participating client companies (those who were active or graduates in Table 5) commercialized 31 products between 2018 and 2020 (Table 7).<sup>1</sup> During this same period, the team estimates that the 94 non-participating companies commercialized 81 products for a combined total of 112 products. Between 2018 and 2020, the team estimates that 41 cleantech products were manufactured by the participating client companies and 91 by non-participating companies for a combined total of 132 products manufactured. The pattern of non-participants commercializing and manufacturing more products than participants was present at baseline. Please note that the estimates for non-participating cleantech companies are based on a small number of respondents, and the team cautions the reader when interpreting the results. For a description of how the team estimated each of these indicators, see section 4.4.1.

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<sup>1</sup> The estimate of 115 participating client companies includes 21 M-Corp startups. These 21 startups participated in both Cleantech and M-Corp.

**Table 7. Estimates for Cleantech Products Commercialized and M-Corps Products Manufactured**

<b>Initiative</b>	<b>Outcome Indicator</b>	<b>Source / Notes</b>	<b>Baseline Estimate</b>	<b>2018–2020 Estimate</b>
Cleantech Startup Growth	Products commercialized	Participant program data	66	31
		Non-participant survey (n=14), sample estimate extrapolated to the non-participant population	214	81
M-Corps	Cleantech products manufactured total	Participants; M-Corps Admin quarterly reports	23	41
		Non-participant survey (n=3), sample estimate extrapolated to the non-participant population of manufacturing companies	198	91
	Cleantech products manufactured in NYS	Participants; M-Corps Admin Interviews	12	14
		Non-participant survey (n=3), sample estimate extrapolated to the non-participant population of manufacturing companies	117	69

### 2.2.2 Cleantech and M-Corps Product Revenues

Table 8 provides a summary of revenues for participating client companies and the estimated revenues for the subset of participating client companies involved in manufacturing in 2018-2020. Participants more than doubled their revenue from baseline but lagged behind non-participants in 2018-2020. M-Corps participants however, generated significantly more revenue than M-Corps non-participants. On average, each product commercialized generated about \$3.7 million in revenue for participating client companies, for a total of \$115 million in revenue. The team estimates that client companies involved in manufacturing generated a total of \$16 million in revenue. The evaluation team also asked the M-Corps Admins to estimate the revenue for manufacturing partners producing the cleantech products. Revenue data was not available for the manufacturing partners and the evaluation team was not able to determine an estimate for this indicator. For a description of how the team estimated each of these indicators see section 4.4.2.2.

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**Table 8. Estimates for Cleantech and M-Corps Product Revenues**

Initiative	Outcome Indicator	Source / Notes	Baseline Estimate	2018–2020 Estimate
Cleantech Startup Growth	Revenue generated by clients and graduates	Participant program data	\$45.0 million	\$115 million
		Participant revenue generated per product commercialized	N/A	\$3.7M
		Non-participant survey (n=14)	N/A	\$318 million
		Non-participant revenue generated per product commercialized	N/A	\$3.9M
M-Corps	Revenue generated by companies producing cleantech products	Participant program data	At least \$7.9 million	\$16 million
		Participant revenue generated per product manufactured	N/A	\$1.5M
		Non-participant survey (n=3)	N/A	\$1.0 million
		Non-participant revenue generated per product manufactured	N/A	\$11,044
	Dollar revenue generated by manufacturing partners producing cleantech products	M-Corps Administrator Interviews	Not estimated	Not estimated

## 2.3 Types of Investment and Deals

### 2.3.1 Number of Cleantech Product Deals

Table 9 provides a summary of estimates for cleantech product deals made between 2018 and 2020 by the 115 participating client companies and 94 non-participating companies. The team included investment agreements, partnerships, and manufacturing agreements when estimating the number of deals. Cleantech participants outperformed non-participants. The team estimates that participating client companies made 579 cleantech product deals during this period and executed 5,304 customer agreements. During the same period, the team estimates non-participating companies made 495 cleantech product deals and executed 2,699 customer agreements. For a description of how the team estimated each of these indicators see section 4.4.3.

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**Table 9. Estimates for Number of Cleantech and M-Corps Product Deals and Customer Agreements**

Initiative	Outcome Indicator	Source / Notes	Baseline Estimate	2018-2020 Estimate
Cleantech Startup Growth	Number of customer agreements executed	Participant survey (n=48), sample estimate extrapolated to the participant population of 115	N/A	5,304
		Non-participant survey (n=14), sample estimate extrapolated to the non-participant population of 94	N/A	2,699
	Increase in the number of deals	Participant survey (n=48), sample estimate extrapolated to the participant population of 115	90-91	579
		Non-participant survey (n=14), sample estimate extrapolated to the non-participant population of 94	37	495
		Compared to non-participants, participants made	53–54 more deals	84 more deals
		Compared to baseline, participants made	N/A	488 more deals
M-Corps	Agreements to invest in cleantech startup companies signed	Participant survey (n=15), sample estimate extrapolated to the participant population of 42 startup manufacturing companies	48	5
		Non-participant survey (n=3), sample estimate extrapolated to the non-participant population of 85 startup manufacturing companies	22	19

### 2.3.2 Cleantech Product Investments and Deals Estimates

Table 10 provides a summary of estimates for investments, investment deals, and follow-on capital received by participating client companies and non-participating companies. As part of the development and commercialization process, participating client companies executed 95 investor agreements and 579 corporate and strategic partnerships compared to 125 investor agreements and 495 corporate and strategic partnerships among non-participating companies between 2018 and 2020.

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Participants raised \$302 million in private investments during 2018–2020, compared to \$173 million raised by non-participating companies. During the same time period, the team estimates participating client companies raised \$113 million in follow-on capital compared to \$1.5 million in follow-on capital raised by non-participating companies. Cleantech participants raised more capital than they did at baseline and raised more capital than non-participants in 2018-2020.

**Table 10. Estimates for Cleantech Product Investments and Deals**

Initiative	Outcome Indicator	Source / Notes	Baseline Estimate	2018-2020 Estimate
Cleantech Startup Growth	Number of investor agreements executed	Participant survey	N/A	95
		Non-participant survey	N/A	125
	Number of partnerships formed	Participant survey	N/A	579
		Non-participant survey	N/A	495
	Private Investment – participating client companies and Increase in dollar amount [private and follow-on capital] raised by the client companies & graduates	NYSERDA program data	\$103–\$141 million <sup>a</sup>	\$302 million
		Non-participant survey (n=14), survey data extrapolated to the non-participant population of 94	\$176–\$225 million	\$173 million
		Compared to baseline, participants raised at least	N/A	\$161 million more
	Private Investment – Dollar amount leveraged by incubators through sponsors other than NYSERDA	Incubator quarterly reports	\$1.3 million	\$2.2 million
	Dollar value of follow-on capital raised	Participant survey (n=48), extrapolated to the participant population of 115	\$22–\$23 million	\$113 million
		Non-participant survey (n=14), extrapolated to the non-participant population of 94	\$49 million	\$1.5 million
Dollar value provided by market actors to cleantech companies (Note: Includes private and public funding)	NYSERDA program data	\$81.0–\$81.1 million	\$327 million	
	Non-participant survey (n=14), sample estimate extrapolated to the non-participant population of 94 startup manufacturing companies	\$236–\$286 million	\$173 million	
M-Corps	Number of agreements signed to invest in cleantech startup companies	Participant survey (n=15), extrapolated to the participant population of 42	N/A	5
		Non-participant survey (n=3), sample estimate extrapolated to the non-participant population of 71 startup manufacturing companies	N/A	19

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Among surveyed participating companies, three-quarters raised less than \$2 million dollars in investments and follow-on capital combined. Similar to the baseline study findings, it seems a portion of companies may be considered “top raisers,” and contribute disproportionately to the average amount of capital raised by participants. Client companies that raised over \$2 million (n=11), are not concentrated at one or two top-performing incubators, but instead are working with four of the six incubators (Table 11). However, of the three client companies that raised more than \$14 million each, two were at NYU and one was at Launch NY. Nine of the 11 top raisers were developing a hardware product as opposed to a software-based product or service. The top raisers also had a higher average satisfaction with their incubator experience than did the rest of the cleantech companies, providing an average satisfaction of 4.8 compared to 4.0 on a scale of a scale of “1” to “5,” where “1” is “not at all satisfied” and “5” is “completely satisfied” (see section 2.7 for more).

**Table 11. Incubators of “Top Raisers”**

<b>Incubator</b>	<b>Number of Top Raisers</b>
The New York University Incubator	4
Southern Tier Clean Energy Incubator	3
RIT Clean Energy Incubator	3
Launch NY	1

### 2.3.3 Cleantech Product Development and Commercialization Time

Table 12 provides a summary of the length of time it took for participating client companies and non-participating companies to have their product ready for market. Cleantech participants were faster to market compared to both baseline and compared to non-participants. The team estimates that participating client companies took an average of about 27 months to achieve market readiness and non-participating companies took an average of about 102 months—a difference of 75 months. The support from NYSERDA was a key reason for this difference, as participating client companies reported the assistance they received from NYSERDA-sponsored incubators resulted in a 25-month reduction in product or service time to market, on average. Participating client companies involved in manufacturing reported an average decrease of 14 months in

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product or service time to market.<sup>2</sup> Some of the estimates which rely on survey data are based on a small number of responses and, thus, should be interpreted with caution.

The team also estimated that it takes 26 months, on average, for products or services commercialized by participating client companies to reach end-users (that is, to land the first sale) compared to 36 months for non-participating companies—a difference of 10 months. Participating client companies also reported that, on average, participating in the incubator decreased the time it took for their product or service to reach end-users by 17 months. For a description of how the team estimated each of these indicators see section 4.4.5.

**Table 12. Estimates for Cleantech Product Development and Commercialization Time**

Initiative	Outcome Indicator	Source / Notes	Baseline Estimate	2018–2020 Estimate
Cleantech Startup Growth	Decrease in time to market for client companies	Participant survey (n=22), 22 of 48 participants had a product that was market ready and provided a valid response	29 months, on average	27 months, on average
		Non-participant survey (n=7), 7 of 14 non-participants had a product that was market ready and provided a valid response	57 months, on average	102 months on average
		Compared to non-participants, participants were	2 times faster to bring product to market	4 times faster to bring product to market
		Compared to baseline, participants were	N/A	2 months faster to market
	Decrease in time to first customer/end-user for qualified client companies	Participant survey (n=17), 17 of 48 participants had a product that was sold and provided a valid response	30 months, on average	26 months, on average
		Non-participant survey (n=5), 5 of 14 non-participants had a product that was sold and provided a valid response	76 months, on average	36 months, on average
		Compared to baseline, participants were	N/A	4 months faster to first customer
M-Corps	Decrease in Time to manufacturing for cleantech products	Participant survey (n=13)	N/A	Decrease of 17 months, on average

<sup>2</sup> The team asked survey respondents to estimate the amount of additional time it would have taken them to get to the current stage of commercialization had they not received assistance from the incubator using six response categories (time ranges; see Appendix D for question response options). The team then took the midpoint for each time range and averaged responses across those respondents who reported having a product or service that was market ready.



### 2.3.4 Ignition Grant Impacts

Table 13 provides a summary of the impacts of ignition grants issued to participating client companies. In 2018, NYSERDA began distributing highly targeted and timely infusions of capital through the ignition grants program, with the intent to better position cleantech startup companies to attract follow-on capital from investors and secure commercialization support from development partners. NYSERDA provided 30 ignition grants totaling \$2,626,348. Of these 30 companies, five received follow-on capital totaling \$1.3 million.<sup>3</sup>

Although 40 participating cleantech and M-Corps companies reported receiving follow-on funding, only 11 received both follow-on and ignition grant funding, meaning that follow-on funding was more common among companies without an ignition grant. However, the estimated amount of the five ignition grant recipients' follow-on funding is weighted from two survey respondents. Due to this limitation, it is difficult to estimate the impact of ignition grants on companies' ability to attract follow-on investment. Anecdotally, however, companies are quite satisfied with the ignition grants. Startup company representatives indicated the grants helped them to advance their product manufacturing, attract clients, and utilize materials and resources. One company representative said in the survey, "we would not be ready to commercialize our software platform this year without the ignition grant." Only two companies, though, reported the ignition grant helped them attract additional funding. One of these reported that the grant allowed them to develop their product to a point where more investors would be attracted to their product. The three companies that received an ignition grant and had a market-ready product indicated the ignition grant decreased the time it took to get to their first customer by 19 months.

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<sup>3</sup> This \$1.3 million value is weighted from two survey respondents who received an ignition grant and provided the value of follow-on capital they received. Because of the small number of respondents who answered this question, the team encourages the reader to interpret results with caution.

**Table 13. Estimates of Ignition Grant Impacts**

Initiative	Outcome Indicator	Source / Notes	Baseline Estimate	2018-2020 Estimate
Cleantech Startup Growth	Dollar value of capital provided by the ignition grants	NYSERDA data	N/A	\$2.6 million
	Dollar value of follow-on capital raised by client companies	Participant survey	N/A	\$1.3 million
	Decrease in time to first customer/end-user for qualified cleantech companies	Participant survey	N/A	Decrease of 19 months

## 2.4 Incubator Resources and Sponsorship Leveraged

Table 14 provides estimates of additional sponsorship leveraged by the NYSERDA-sponsored incubators. Since January of 2018, incubators have leveraged \$2.2 million in public and private funding from sponsors other than NYSERDA. During the same time period, incubators leveraged \$9.8 million in total funding, making NYSERDA one of the top funders of these incubators. One interviewed incubator staff person commented on the value of NYSERDA’s support and initiatives saying, “These programs NYSERDA creates for the client companies have been very beneficial in helping client companies, helping the incubator serve the client companies, and get new ones in.”

Incubators also relied on approximately 390 service providers, mentors, and other stakeholders for product development and commercialization assistance to their client companies. On average, each client company reported using four unique services provided by its incubator (the survey asked about 12 incubator services). The top services mentioned by the client companies included mentoring/training (81%), business plan or strategy assistance (51%%), office or lab space (49%), and university resources (e.g., access to student/faculty talent, labs; 43%).

Incubator staff reported in the interviews that specific coaching services offered included business consulting, intellectual property consulting, and investment pitch coaching, all of which are generally provided in-kind or at a reduced rate. During the baseline evaluation, incubator staff noted difficulties in finding suitable coaching professionals, advisors, and mentors to provide services at low or no cost. Between 2018 and 2020, however, incubator staff did not report these

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issues, with some reporting they have plenty of volunteer assistance available to their clients. The incubators had 90 more service providers available to advise client companies than they did at baseline.

**Table 14. Estimates for Incubator Resources and Sponsorship Leveraged**

Outcome Indicator	Source	Baseline Estimate	2018-2020 Estimate
Dollar value of program funding from other sponsors leveraged by incubators	Incubator quarterly reports	\$1.3 million	\$2.2 million
Value of sponsorship funding leveraged by the incubators	Incubator quarterly reports	N/A	\$9.8 million
Number of participating high-value service providers, mentors, and other key stakeholders in the program that incubators provide to client companies	Incubator staff interviews (N=6)	300	390 <sup>a</sup>
In kind (non-dollar) goods or services provided by sponsors to the incubators	Participant survey (n=48)	6 services provided per client company, on average	4 services provided per client company, on average

<sup>a</sup> One incubator representative noted that they have access to a network of more than 2,000 mentors if they need to bring in more support

## 2.5 Client Resources Leveraged

Table 15 summarizes the services the client companies leveraged from market actors other than the incubators. The Incubators provide a variety of services that startup companies need throughout their product development. Weighted to the population, fifty-five participating companies received services or resources from organizations other than their NYSERDA-sponsored incubator. Participating companies most frequently reported receiving mentoring/training and business plan or strategy assistance while non-participants most frequently reported receiving technical assistance and access to customers as services they accessed.

**Table 15. Non-Incubator Resources Leveraged**

Resource/Service	Participant companies (n=55)	Non-participant Companies (n=59)
Mentoring/Training	36	18

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Resource/Service	Participant companies (n=55)	Non-participant Companies (n=59)
Business plan or strategy assistance	32	18
Business services (e.g., legal, accounting, administrative support)	32	18
Providing access to funders/investors	23	12
Marketing and design services	19	6
University resources (e.g., access to student/faculty talent, labs)	19	0
Office or lab space	18	0
Direct funding	18	0
Providing access to corporate/strategic partners	16	24
Product validation	15	0
Technical assistance	12	35
Providing access to customers/end users	11	30

## 2.6 Social Network Analysis Findings

The evaluation team conducted a Social Network Analysis (SNA) to investigate the interactions among cleantech startups and resource providers in the cleantech ecosystem in NYS. Specifically, the SNA assessed three of the known market gaps (henceforth called domains) facing entrepreneurs in the clean energy marketplace including access to capital, development of strategic partnerships, and provision of key business support. Key findings are reported here, and the full findings can be found in Appendix F.

The SNA found that NYSERDA’s incubators and M-Corps Admins were connected to more startups on average in the domain of business support provision than in the domains of facilitating access to capital or facilitating strategic partnerships. The participant startups were also more successful securing business support than they were developing strategic partnerships or securing access to capital (62% vs. 48% vs. 44% success rate, respectively) indicating the positive influence of NYSERDA connections. Participating startups were more successful than non-participating startups in their interactions with providers across the domains as can be seen in Table 16. The evaluation team classified interactions as successful when they were reported as being “extremely effective” or “very effective” on a five-point scale by startups, or if the interaction resulted in access to capital. The higher proportion of successful interactions among

participant companies suggests NYSERDA’s incubators and M-Corps Admins are facilitating fruitful connections with providers.

**Table 16. Rate of Successful Interactions Across Domains**

<b>Domain</b>	<b>Participant companies</b>	<b>Non-participant Companies</b>
Provision of key business support	62%	36%
Development of strategic partnerships	48%	21%
Access to capital	44%	32%

## **2.7 Satisfaction and Liquidity Events**

Table 17 summarizes average satisfaction with the resources and support the client companies received from the incubator they worked with, as well as the number of exits and liquidity events from 2018–2020. On average, client companies were highly satisfied with their experience working with the incubator, providing an average of 4.4 on a scale of “1” to “5,” where “1” is “not at all satisfied” and “5” is “completely satisfied.” More than 80% of cleantech respondents were either mostly or completely satisfied with the resources and support they received from the incubator. The most satisfied cleantech companies also reported receiving more services on average from their incubator. The cleantech companies that were either mostly or completely satisfied received an average of 4.8 services from their incubator, while cleantech companies that were less satisfied received an average of 2.5 services.

M-Corps participants were also highly satisfied with the resources and support they received from the M-Corps administrator they worked with, providing an average rating of 4.1 out of 5, using the same scale as above. More than two-thirds of M-Corps respondents were either mostly or completely satisfied.

Additionally, while no survey respondents reported exits or liquidity events during 2018–2020, incubator staff reported a total of five such events in that time period.

**Table 17. Satisfaction and Liquidity Events**

<b>Outcome Indicator</b>	<b>Source</b>	<b>Baseline Estimate</b>	<b>2018-2020 Estimate</b>
Satisfaction with the resources and support from the Incubator	Participant survey	N/A	4.4 out of 5

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Outcome Indicator	Source	Baseline Estimate	2018-2020 Estimate
Satisfaction with the resources and support from the M-Corps Administrator	Participant survey	N/A	4.1 out of 5
Number of cleantech companies that realized exits or liquidity events in 2018-2020	Incubator interviews	N/A	5

Note: Respondents ranked their satisfaction using a scale of “1” to “5,” where “1” is “not at all satisfied” and “5” is “completely satisfied.”

## 2.8 COVID-19 Impacts

Nearly all participating Cleantech and M-Corps client companies (85%) reported some aspect of their business was impacted by the pandemic and subsequent stay at home orders. The most frequently reported impacts among participants were contract or customer loss, followed by funding or investment loss. Funding or investment loss was also most frequently reported among non-participants, followed by delays in sales and transitioning to remote work. Delays were a major issue that both participant and non-participant companies experienced in 2020. One participant company was hit particularly hard by the pandemic saying, “[our product] is installed inside occupant spaces. During the pandemic, access to occupant spaces was limited for emergencies only. This severely limited our ability to sell our product until the vaccination rollout picked up steam in March 2021.”

Although most respondents reported negative impacts to their business, Incubator staff did not formally alter performance metrics or benchmarks for client companies. The Incubator staff understood it was a challenging time and supported client companies as best they could during the switch to virtual work and helped the startups progress throughout 2020.

Incubators were also impacted by the pandemic, notably they had to switch to virtual operations and experienced a reduced ability to network due to social distancing requirements. Table 18 shows the main impacts of COVID-19 on the operations of each incubator.

**Table 18. COVID-19 Impacts to Cleantech Incubators**

NYSERDA-Sponsored Incubators	COVID-19 Impacts
ACRE at NYU Tandon School of Engineering	Switched to remote work; shut down office/lab space; altered communication/networking abilities
Venture Creations at RIT	Reduced networking and events; switched to remote work; shut down office/lab space; loss of investment for client companies

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<b>NYSERDA-Sponsored Incubators</b>	<b>COVID-19 Impacts</b>
CEBIP at Stony Brook University	Continued remote operations; shut down office/lab space; delays with client company projects
Clean Tech Center at The Tech Garden	Loss of investment for client companies; shut down office/lab space; switch to remote work; fewer new client companies
Southern Tier Clean Energy Incubator at Binghamton University	Increased client company participation; increased marketing efforts; increased investments and funding
Launch NY Emerging Cleantech Opportunity (ECO) Incubator	Switched to remote work and virtual networking; upgraded technology and digital tools to accommodate remote work

### 3 Findings and Recommendations

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**Finding 1: NYSERDA’s incubator strategy has helped accelerate the growth of cleantech startups in NYS.** The participating cleantech companies reported raising a substantial amount of capital, more than \$415 million in private investments and follow-on capital between 2018 and 2020. Those companies that raised more capital were more highly satisfied with their experience at a NYSERDA-sponsored incubator. Additionally, findings show a considerable decrease in commercialization time for participating client companies when compared to non-participating companies. Compared to non-participants, participants were four times faster bringing a product to market. Collectively, these findings suggest that NYSERDA’s incubator support via the Cleantech Startup Growth Initiative Program has accelerated the growth of cleantech startups in NYS.

**Finding 2: NYSERDA’s M-Corps Initiative is overcoming obstacles in manufacturing clean energy products.** Participating startups manufactured 41 products in 2018-2020 and one-third of them (14 of 41) were manufactured in New York. Participants were 2.5 times faster than non-participants in bringing product to manufacturing-stage. M-Corps participants generated \$16 million in revenue as compared to non-participants who generated \$1.3 million. Collectively, these findings indicate M-Corps is playing a key role in helping cleantech startups manufacture products.

**Finding 3: Participating cleantech companies that were more engaged with their incubators were more satisfied.** Cleantech companies who were either mostly or completely satisfied received an average of 4.8 services from their incubator out of the 12 asked about in the survey. While cleantech companies that were less satisfied received an average of 2.5 services. This finding may not be surprising but does illuminate an opportunity to consider additional strategies to engage participating cleantech companies to advance program goals.

**Recommendation 1:** Consider working with Incubators to design strategies to further motivate cleantech companies to leverage incubator services such as offering a bonus when a certain number of services are utilized.

**Finding 4: The ignition grants have value beyond attracting additional funding for the startup companies.** The goal of ignition grants is to better position cleantech startup companies to attract follow-on capital from investors and secure commercialization support from



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development partners. Unfortunately, given limitations in the data, it is difficult to estimate the impact of ignition grants in meeting these goals. However, client companies indicated they utilized ignition grants to advance their business models, fund internship staff, prepare for required testing, advance manufacturing, and attract clients. The grants also decreased the time to commercialization by more than one and a half years.

**Recommendation 2:** If NYSERDA has interest in launching another targeted grant program for cleantech startups, consider conducting a study to more fully understand if ignition grants are helping cleantech startup companies attract follow-on capital from investors and secure commercialization support from development partners.

**Finding 5: The COVID pandemic affected a majority of cleantech companies in NYS.** They experienced delays in product development, and loss of contracts and customers. The move to remote work made it challenging to network and earn investments. Incubator staff continued to support the cleantech companies to the best of their ability during these challenging times. It is difficult to determine how different the metrics measured in this study would have been without the pandemic.

**Recommendation 3:** Continue to assess metrics to develop a longer time horizon of data to understand impacts of COVID-19 on key program indicators.

**Finding 6: Update cleantech startup companies population estimates.** Population estimates for non-participant cleantech startup companies are challenging to understand. This study relied on estimates provided in a 2017 report targeted to understand the population of cleantech startup companies. This report is now five years old and given the major macro- and micro- shifts in the economy, its estimates are likely outdated. In addition, given lack of a data source of current non-participant cleantech startup companies and limited budget, non-participating startups included in the survey effort were restricted to organizations who have applied to NYSERDA initiatives but who were not awarded a contract. Using them as a comparison group is challenging as there is likely something inherently different with this group by virtue of the fact NYSERDA opted to not select them for support.

**Recommendation 4:** Consider updating the 2017 *Characterizing New York State's Cleantech Ecosystem and the Role of NYSERDA's ICBD Program* report in the months preceding the next market assessment. Include in this research a task to create a more

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comprehensive list of non-participant cleantech startup companies that can be leveraged in the next market assessment.

## 4 Methodology

### 4.1 NYSERDA-Sponsored Startup Incubator and M-Corps Administrator Interviews

NYSERDA staff provided the research team with contact information for incubator and M-Corps Administrator staff. The team was able to schedule phone interviews with one to two contacts at each of the six incubators and two M-Corps Admins. The interviews took place in March 2021 and lasted approximately 30 minutes each. If needed, the team followed up with staff via email with clarifying questions.

### 4.2 Participant Client Survey

The evaluation team used a census sampling approach for the participating incubator client company survey. The research team compiled a list of current and graduated client companies and invited them to take the survey. The team established quotas for Cleantech and M-Corps client companies to ensure 80%/15% confidence/precision per group was achieved. Table 19 shows that the team was able to achieve 90/10 confidence/precision for the companies participating in the Cleantech Startup Growth Initiative.

**Table 19. Participant Client Company Strata and Summary**

Group	Client Company Population <sup>a</sup>	Quota	Sample	Conf./Prec.
Cleantech Startup Growth Initiative	N=115	20	48	90/10
Manufacturing Corps	N= 42	16	15	85/15

<sup>a</sup> Source: Program data

Incubator staff provided contact names and email addresses for participating incubator client companies. During survey fielding, the team sent out an initial invitation email along with two reminder emails to up to five contacts at active and graduated companies. The team conducted the surveys during April 2021 and with founders or senior staff at the companies who were active or graduated from one of the six NYSERDA-sponsored startup incubators in NYS. The team received 78 complete and partial responses to the survey. The team included responses that were mostly complete and in cases where more than one contact at a company responded, the team used the most complete response or combined the responses to provide a more complete look into the company.

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The team used a total of 48 surveys for the Cleantech analysis (providing 90%/10% confidence/precision) and 15 for the M-Corps analysis (providing close to 85%/15% confidence/precision).

### 4.3 Non-Participant Survey

NYSERDA provided the evaluation team with a list with contacts at 143 non-participating cleantech companies to serve as a comparison group to the incubator client companies. NYSERDA indicated this list was composed of companies that had contacted NYSERDA to inquire about startup services but that did not participate in any NYSERDA program.

Survey fielding occurred in April 2021. To reach the desired number of completes, the team made up to three attempts to contact all non-participating companies. To increase the response rate the team also offered respondents a \$75 online gift card for completing the survey. The team did not have access to location data, and was unable to sample non-participants by region.

Table 20 provides a disposition summary from the non-participant survey. Out of 143 contacted non-participating cleantech companies, the team was able to complete 14 surveys to achieve a 10% response rate. However, only one respondent among the 14 completes indicated they were involved in manufacturing. To increase the number of responses to manufacturing questions, the team reopened the survey in June 2021 to a select number of non-participating companies that NYSERDA knew were involved in manufacturing between 2018 and 2020. After relaunching the survey to this select group, the team received an additional two responses.

The team did not have access to the location of the non-participants before fielding the survey, so the non-participating companies were weighted by the region they reported in the survey to the population of non-participating companies that the baseline report determined were in business in that region. The baseline evaluation team called 143 non-participant cleantech startup companies identified by a 2017 report titled “Characterizing New York State’s Cleantech Ecosystem and the Role of NYSERDA’s ICBD Program” and determined 94 were in still in business in 2017.

**Table 20. Non-Participant Survey Disposition**

Region	Population n from Baseline	Total Completed n
New York City	38	5
Central New York	23	5

<b>Region</b>	<b>Population n from Baseline</b>	<b>Total Completed n</b>
Western Finger Lakes	25	2
Long Island	8	2
<b>Total</b>	<b>94</b>	<b>14</b>

## **4.4 Outcome Indicator Analysis Methods**

The following section provides details of the research team’s analysis methods for each outcome indicator described in Section 2.

### **4.4.1 Products Commercialized and Manufactured**

#### **4.4.1.1 Products Commercialized**

The team summed the number of products commercialized for the participant population using the Program data received from NYSERDA. For the non-participant population, the weighted number of commercialized products that 15 non-participating companies reported from 2018–2020 were summed to obtain a relevant population estimate. Table 1 and Table 2 in Appendix A provide details on the weighting approach.

#### **4.4.1.2 Cleantech Products Manufactured Total**

The team summed the number of products manufactured for the participant population from the M-Corps quarterly reports received from NYSERDA. For the non-participant population, the weighted number of manufactured products that non-participating companies reported from 2018–2020 were summed to obtain a relevant estimate. Table 1–Table 4 in Appendix A provides details on the weighting approaches used for these analyses to extrapolate from the sample to the subpopulation.

#### **4.4.1.3 Cleantech Products Manufactured in NYS**

In their quarterly reports to NYSERDA, M-Corps Admins provided an estimate of the number of products manufactured in New York State, totaling the estimate provided in Section 2. For non-participants, the team summed the weighted number of products manufactured in NYS between 2018 and 2020 as reported in the survey by non-participants involved in manufacturing to establish an appropriate estimate.

#### 4.4.2 Cleantech Product Revenues

##### ***4.4.2.1 Revenue Generated by Clients and Graduates***

For this indicator, the team relied on revenue data reported to the Program by incubators for 2018-2020.

##### ***4.4.2.2 Revenue Generated by Companies Producing Cleantech Products***

The team summed the revenue data earned by companies that manufactured a product between 2018 and 2020 as reported to the Program by the incubators. The team summed the weighted revenue from non-participants involved in manufacturing, as reported in the survey.

#### 4.4.3 Number of Cleantech Product Deals

##### ***4.4.3.1 Number of deals***

Surveyed participating client and non-participating companies reported the number and amount of capital investment they secured from the following sources: Corporate investors, angel investors, later-stage venture capital investors, public equity, and private equity. They also reported receiving capital investments from founder's own funds, friends or family, grants, funding from incubators, seed/early-stage venture capital, or competition/awards, which the team excluded from this analysis. That is, the team only included funds from corporate investors, angel investors, later-stage venture capital investors, public equity, and private equity. Surveyed participating client and non-participating companies also reported developing partnerships to secure capital funding, receive help with distribution resources, and receive assistance with marketing/business development and manufacturing, which the team also included in its estimates of the number of agreements. The reported information reflected investment or partnership agreements between 2018 and 2020. The team then applied the weights to extrapolate from the sample to the population (see Table 1 and Table 2 in Appendix A).

##### ***4.4.3.2 Agreements to invest in cleantech startup companies signed***

The team developed the estimate using the same methodology used to calculate the number of deals, which relied on responses from surveyed participating client companies and non-participating companies. The team then applied the weights to extrapolate from the sample to the population (see Table 1 and Table 2 in Appendix A).

#### **4.4.4 Cleantech Product Investment Estimates**

##### ***4.4.4.1 Private Investment – client companies***

The team estimated private investment raised by summing the total private investments raised by participating Cleantech companies as reported in the NYSERDA Program tracking data. Weights were not used because this value was a sum of the total private investment reported for the population of participating cleantech companies. Surveyed non-participating companies did not specify funding amounts by source but instead provide the total amount of funding. The team then applied weights to extrapolate from the non-participant sample to its population (see Table 1 and Table 2 in Appendix A).

##### ***4.4.4.2 Private Investment—Money Leveraged by Incubators Through Sponsors Other Than NYSERDA***

The team summed all funding (whether public or private) from incubator sponsors other than NYSERDA as reported by incubator staff in their quarterly financial statements.

##### ***4.4.4.3 Dollar Value of Follow-On Capital Raised by Client Companies***

The team separately summed the follow-on capital investments participating client and non-participating companies reported receiving in the survey. The survey defined follow-on capital as additional investments made by investors who had previously invested in the company's product. The team then weighted the survey respondent values to extrapolate to the population (see Table 1 and Table 2 in Appendix A).

##### ***4.4.4.4 Dollar Value of Capital Provided by the Ignition Grants***

The team summed the amount of ignition grants as listed in NYSERDA documentation.

#### **4.4.5 Cleantech Product Development and Commercialization Time**

##### ***4.4.5.1 Time to Market for Client Companies***

For this analysis, the team used responses from 23 surveyed participating client companies and eight surveyed non-participating companies who reported having a product that was ready for market and provided a valid response. The team then computed the average number of months between the time participating and non-participating companies reported beginning working on developing or commercializing the product and the time they reported completing the validation of the product in a commercial environment.

#### **4.4.5.2 Time to Manufacturing for Client Companies**

For this analysis, the team used responses from nine surveyed participating client companies and four non-participating companies involved in manufacturing who reported having a product that was ready for market and provided a valid response. The team then computed the average number of months between the time participating and non-participating companies involved in manufacturing reported beginning working on developing or commercializing the product and the time they reported completing the validation of the product in a commercial environment.

#### **4.4.5.3 Time to First Customer/End-User for Qualified Client Companies**

For this analysis, the team used responses from 20 surveyed participating client companies and five non-participating companies who reported having a product that was at the initial sales stage and provided a valid response. The team computed the average number of months between the time participating and non-participating companies began working on developing or commercializing the product and the time their product was first purchased by customers or other end-users.

#### **4.4.6 Incubator Resources and Sponsorship Leveraged**

##### **4.4.6.1 Dollar Value of Program Funding from Other Sponsors Leveraged by Incubators**

The team summed all funding (whether public or private) from incubator sponsors other than NYSERDA as listed in reports provided by the incubators to NYSERDA. Incubators also reported the amount received in rent from their client companies, which the team excluded from this analysis.

##### **4.4.6.2 Number of Participating High-Value Service Providers, Mentors, and Other Key Stakeholders in the Program that Incubators Provide to Client Companies**

The team asked incubator staff how many mentors, advisors, and other stakeholders were affiliated with their incubator during the interviews. The team counted all these mentors, advisors, and other stakeholders as high-value service providers and summed them.

##### **4.4.6.3 In-Kind (Non-Dollar) Goods or Services Provided by Sponsors to the Incubators**

The team relied on the data from the participant survey to estimate the average number of unique and in-kind incubator services used by client companies. Surveyed participating client companies



were asked to report the way in which the incubator supported their product development or commercialization and were given the following response options: office or lab space, mentoring/training, technical assistance, business plan or strategy assistance, university resources, business services, marketing and design services, product validation, direct funding, and providing access to funders/investors, corporate/strategic partners, and customers/end users. The team averaged the total number of services each participant and non-participant company received to estimate this metric.

### 4.5 Limitations

**Limitation 1 – Self-reported data:** Survey, interview, and program data in this study are self-report data. Self-report data may suffer from multiple limitations, such as respondents may have exaggerated their answers or respondents may have forgotten to report a key detail.

**Limitation 2 – Small sample sizes:** The analysis of the ignition grants' follow-on funding impacts, the M-Corps non-participant comparative analysis, and the SNA were hampered by small sample sizes.

**Limitation 3 – Unknown non-participant cleantech startup population:** It is difficult to determine what the population of non-participating cleantech startup companies is. The definition of a non-participant cleantech company is one that is developing a clean energy-related innovation and would be willing to relocate to NYS to receive NYSERDA startup services. There is no comprehensive database that contains such a list in order to know the population. For this study, non-participating startups included in the survey effort were limited to organizations who have applied to NYSERDA initiatives but who were not awarded a contract. Using them as a comparison group is challenging as there is likely something inherently different with this group by virtue of the fact NYSERDA opted to not select them.