

**DEPARTMENT OF ADMINISTRATIVE SERVICES****COMMISSION**

4/11/2023

On-Call Task Assignment for a Study
Contract No.: OC-DCS-ENGY-0030
Task No. 3
CAS Decarbonization Study
490 Capitol Avenue
Hartford, CT 06103
Project No. BI-2B-414

Source Once Inc. (DE)
Attn: Matt Cinadr
53 State Street, 14th Floor
Boston, MA 02109

Dear Mr. Cinadr:

In accordance with the applicable provisions of the subject on-call contract, and the applicable provisions of the Department of Administrative Services (DAS) Consultants Procedure Manual approved by the DAS Commissioner dated September 2016, Source Once Inc. (DE) is hereby authorized to perform the following scope of services for the subject project. In this task letter the term Consultant shall be interpreted to mean Engineer, as identified in the contract for on-call services.

The purpose of the CAS Decarbonization Study is to define, develop, and assess options for modifying CAS operations to meet Executive Orders 1 and 21-3 ("EO 1") and ("EO 21-3"). Incorporated into EO 1 is GreenerGov CT, a "Lead by Example" initiative with a mission of advancing environmental leadership, reducing operating costs and environmental impacts of State government operations, and generating savings for taxpayers. Further, EO 21-3 calls for executive branch state agencies to take significant actions within their authority to reduce carbon emissions. Decarbonization involves the entire supply and demand chain of energy source, generation, distribution and end use. The proposed study involves the use of decarbonized Utility and Non-Utility supply options, State-owned supply-side options and both State and Private demand sides. Through the modification or replacement of these systems, the entire CAS becomes decarbonized.

1. Scope

The engineer shall conduct a study that will follow a stage gate process starting with an initial screening assessment to support a rank and score process which will identify options to advance to a detailed feasibility phase. The process will begin with a client working session to determine the list of options or design scenarios to be included for further technical and economic evaluation along with a ranking and scoring system. Reduction and optimization of demand side systems through holistic energy efficiency measures and active load management will play a key role in the selection and advancement of supply side options, their capacities and cost.

The Engineer shall evaluate the scenarios in the tables below during the study. All scenarios are subject to modification through the initial client workshop and are intended to convey the most applicable solutions based on known asset conditions, energy infrastructure and load profile requirements. Table 1- Supply Side Scenarios defines the energy supply options for the generation of thermal heating and cooling products. The fuels considered to feed these supply side technologies (i.e. raw energy supply mix) include conventional natural gas, renewable natural gas, renewable fuels, geothermal, conventional electricity and renewable electricity. Table 2-Demand Side Scenarios outlines the range of load requirements for each of the end users, that is the quality and quality of the thermal products necessary to meet the end user/off-taker requirements.

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Table 1: Supply Side Design Scenario Definitions

Supply Side Design Scenarios	A	B	C	D	E	F
Description	Hybrid of Heat Pumps & Electric Boilers	100% Electric Boilers	100% Heat Pumps	Hybrid of Heat Pumps & Natural Gas Condensing Boilers	100% Natural Gas Condensing Boilers	Defined per Client Workshop
Fuels	Renewable Electricity	Renewable Electricity	Renewable Electricity	Renewable Electricity, Renewable Fuels & Conventional natural Gas, H2 Ready	Renewable Fuels & Conventional natural Gas, H2 Ready	Ex: Strategically sited networked heat pumps, local solar thermal, H2 ready CHP, heat recovery systems

Table 2: Demand Side Design Scenario Definitions

Demand Side Design Scenarios	1	2	3
Description	Reduce loads via energy efficiency at public and private facilities and reduce heating supply temperature	Reduce loads via energy efficiency at public facilities and keep heating supply temperature as is	Keep loads and heating supply temperature as is
Systems Impacted	Public & Private demand side, distribution and supply side systems	Public demand side and supply side systems	Supply side systems

Phased Scope of Work

Phase 1: Screening Assessment.

Initial Screening Assessment Task 1: Study Kickoff – Client Workshop #1

The purpose of this initial working session is to define the list of assumptions, scenarios and rank and scoring metrics to be used in the preliminary analysis to support final study selection(s). Carbon related assumptions such as \$/ton, discount rate, grid emission factor forecasts, zero carbon and cost-effective carbon reduction definitions and others required as part of a life cycle cost analysis shall be provided to the State for review ahead of the workshop. This is an opportunity for the State to convey any other scenarios or configurations to include in the study. The Engineer shall send meeting minutes and workshop notes to all participants. Minutes and notes shall include all agreed upon ranking and scoring systems to be used to filter scenarios for advancement from screening to feasibility level of analysis.

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Deliverable 1: The Engineer shall submit client workshop and documentation of agreed upon study assumptions, inputs, parameters, definitions, scenarios and the corresponding life cycle analysis results such as NPV, IRR, CO2 and others as required by the State.

Task 2: Total Energy Requirements/Design Basis

Securing accurate thermal and electric profiles is a critical first step in forming the basis of design for decarbonization. To support this effort the Engineer shall review historical, current and planned energy consumption and related metering data sets to construct representative electric and thermal load profiles. This assessment conducted by the engineer will reconcile supply-based data sets from the central plant to demand based/off-taker metered data sets. The Engineer shall identify data gaps or inconsistencies and define the specific meter and billing assessment recommendations.

Deliverable 2: The Engineer shall confirm the historical, existing and planned supply and demand metered thermal and electric load data for use in the decarbonization basis of design. The Engineer shall conduct conference calls or workshops to review and confirm baseline energy requirements before proceeding with further analysis.

Task 3: Regulatory Evaluation

The Engineer shall develop representative financial and schedule impacts for incentives and grants from Federal, State and Utility sponsored programs for inclusion in life cycle cost analysis. The Engineer shall hold early working sessions with DEEP, CT Green Bank, Eversource and CNG to inform them of the scenarios under investigation and discuss applicable financing or grant availability for inclusion in preliminary life cycle costing.

On the federal level, the Engineer shall review DOE's Energy Infrastructure Reinvestment Financing (section 1703) and compare its financing terms with those traditionally used by DAS to fund such initiatives. With respect to the Inflation Reduction Act ("IRA") the Engineer shall evaluate the expansion of the Advanced Energy Project Tax Credit to determine applicability of direct payment of the credit in the absence of a federal tax liability. The Engineer shall identify sensitivity and risk factors and apply to areas of the IRA where Treasury guidance is undefined.

The Engineer's infrastructure team, supported by rate and tariff subject matter experts, shall hold discussions with Eversource and Connecticut Natural Gas regarding schedule and cost impacts due to changes to electric and gas service for the various decarbonization scenarios.

Deliverable 3: The Engineer shall supply a summary of applicable financial incentives per scenario and conduct conference calls to review and confirm analysis application of such incentives and financing terms.

Task 4: Demand Side Evaluation

The Engineer shall conduct building assessments on all CAS off-takers to determine the technical and financial feasibility of the demand side scenarios presented in Table 2 (above) and their resulting impacts on total energy requirements. The demand side evaluation will also identify constraints and criteria of reducing supply thermal supply temperatures and document the extent of necessary capital upgrades to achieve a low enthalpy, zero carbon system. Through an initial desktop study followed by field/site investigations of each facility, the Engineer shall verify the partial information on the HVAC configuration of the 15 CAS off-takers provided by the State.

The Engineer shall examine building energy systems to identify and quantify demand side opportunities. This will include the building envelope, lighting, HVAC, domestic hot water, plug loads, and any process uses. The Engineer shall produce an analysis of building energy consumption which will quantify base loads, seasonal variation, and energy costs. The Engineer shall assess lighting, air quality, temperature, ventilation, humidity, and other conditions that could affect energy

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performance and occupant comfort. The Engineer shall evaluate thermal storage and heat recovery from thermal heating and cooling equipment to optimize equipment capacity factors and arbitrage opportunities while leveraging simultaneous heating and cooling opportunities through waste heat recovery applications. The Engineer shall conduct and order performance calculations and cost estimating for each identified demand reduction measure according to building and simple payback.

Deliverable 4: The Engineer shall provide a summary of technical and financial feasibility of adopting demand side (load reduction) strategies as part of decarbonization efforts. The Engineer shall confirm high, medium and low energy consumption profiles for equipment sizing and configuration tasks under the supply side evaluation and identify for each scenario demand side project economics combined with supply side economics to inform total project economics.

Task 5: Thermal Distribution System Evaluation

The Engineer shall conduct a preliminary mass balance on the thermal distribution system to determine where restrictions may occur due to proposed supply temperature adjustments since lower temperature supply results in the need for higher flow to meet the same energy demand. The Engineer shall identify where restrictions are and prepare a concept design and construction budget which will be incorporated into screening, and if required, shall be revised in greater detail in subsequent pro forma development.

Deliverable 5: The Engineer shall provide a summary of initial findings impacting thermal distribution system and off-takers. The Engineer shall refine during the feasibility phase, as applicable, final modifications, operational and financial impacts.

Task 6: Supply Side Evaluation

The Engineer shall conduct a supply side evaluation, which will identify and document major design constraints and criteria for each of the scenarios presented in Table 1. The Engineer shall develop concept designs, installation and operating bases for each scenario along with order of magnitude capital, operating and carbon costs to inform initial life cycle cost analysis. The Engineer shall develop preliminary operating models to represent annual utility and carbon costs for each scenario. The Engineer shall use existing published geotechnical data to determine initial feasibility of geo-source and air source heat pump scenarios. If geo-source proves favorable, the Engineer shall consider and provide a geotechnical study including test wells under a separate scope.

Deliverable 6: The Engineer shall provide a concept design basis and summary of constraints and criteria for each supply side scenario, which will include order of magnitude capital, operating and carbon costs for each scenario presented in Table 1.

Task 7: Initial Screening Assessment Results (Client Workshop #2)

By combining Tasks 1–6 into a comprehensive evaluation model the Engineer shall have the basis for screening each scenario. The Engineer shall provide a suggested screening criteria to the State, which will be workshopped and agreed upon in advance of the completion of Tasks 4, 5 and 6. Using the agreed upon criteria, the Engineer shall score and rank the options to yield a final list of demand and supply side options to include in the feasibility study.

Deliverable 7: The Engineer shall provide the results of screening scores, net present costs and a summary of the pros and cons of each scenario in the form of an Executive Presentation. The Engineer shall also provide an accompanying memo that will memorialize the scope boundaries and inputs and assumptions used to arrive at the recommended scenarios.

Phase 2: Feasibility Study

Task 8: Advance Technical Development

It is assumed three scenarios will fall out of the initial screening assessment, per rank and scoring criteria, and advance to the detailed feasibility phase. For each of the three scenarios the Engineer shall advance the technical, financial (including subsidies) and regulatory analysis to refine the capital and operating costs for each option.

For scenarios involving adjustment of current supply temperature to achieve energy and carbon savings, as identified under Task 4 above, the Engineer shall conduct a more detailed analysis to determine plausible temperature profiles for the district system. The temperature study shall involve interviews with building operators and the State's HVAC contractors in conjunction with a review of current building HVAC equipment and end use requirements. The Engineer shall recommend temperature adjustment testing at specific locations on a trial-and-error basis to support further project development efforts.

Task 9: Regulatory and Financing Strategies

With the top three options identified, the Engineer team shall revisit the project with DEEP, CT Green Bank, Eversource and CNG to determine if any interactive effects between the agencies would impact pursuing IIRJA or IRA funding mechanisms and associated timelines. The Engineer shall develop a strategy for pursuing funding under various scenarios as determined through discussions and meetings with various stakeholders and agencies.

Task 10: Develop Capital and Operating Budgets

The Engineer shall develop capital and operating budgets and an overview of the operating impacts compared to current thermal plant operations for each scenario. Costs developed will include the cost of any electric infrastructure upgrade needed for the grid connection. The Engineer shall assess cost impacts on private, non-state-owned facilities to determine the approach, strategy and allocation of changes across each type of end user. The Engineer shall forecast operating budgets across the agreed upon project term, typically 30 years. The Engineer shall apply similar analysis to any future loads added through district expansion efforts.

The level of Project definition (i.e. level of design) developed for each of the three advanced options will fall between 10 and 15% percent, which includes conceptual design, equipment selection and budgetary pricing. Accordingly, capital and operating cost estimates will be commensurate with the level of project definition and will have an expected range of accuracy between -30 to 50 percent.

Deliverable: The Engineer shall provide a draft, final report, and executive presentation, which will include the following:

- Concept basis of designs for each scenario
- Forecasts and assumptions summary
- Cost benefit analysis, total cost of ownership and life cycle cost in the form of project proformas capturing applicable financing terms, incentives, grants, project capital, operating and carbon costs
- Capital cost estimate details commensurate with the level of project definition
- Baseline versus proposed operating cost comparisons for State and Private sector off-takers
- NPV, IRR, \$/ton CO2 abated values for each scenario
- Sensitivity and risk analysis results
- Milestone schedules for each deployment
- Brief project execution narrative

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2. Phased Fee:

The Consultant's total shall not exceed the fee of Two Hundred Forty-Seven Thousand One Hundred Dollars **(\$247,100.00)** and shall be paid as indicated below for the completion of the work specified where previously authorized in writing and after the Department of Administrative Services receives and accepts each phase of the work. Said fee includes all sub-consultant fees and the Consultant's overhead and profit.

2A. Screening Assessment: Is not to exceed the amount of One Hundred Ninety-Two Thousand Seven Hundred Four Dollars **(\$192,704.00)** broken down as follows:

- a. **Task 1 Client Kickoff Workshop #1 (60 hours): \$20,630.00**
- b. **Task 2 Total Energy Requirements/Design Basis (11 hours): \$3,641.00**
- c. **Task 3 Regulatory Evaluation (60 hours): \$13,620.00.**
- d. **Task 4 Demand Side Evaluation (206 hours): \$51,200.00**
- e. **Task 5 Thermal Distribution System Evaluation (126 hours): \$28,224.00**
- f. **Task 6 Supply Side Evaluation (138 hours): \$29,700.00**
- g. **Task 7 Screening Assessment Results, Workshop #2 (188 hours): \$45,689.00**

2B. Feasibility Study: Is not to exceed the amount of Fifty-Four Thousand Three Hundred Ninety-Six Dollars **(\$54,396.00)** broken down as follows:

- a. **Task 8 Advance Technical Development (109 hours): \$24,152.00**
- b. **Task 9 Regulatory and Financing Strategies (37 hours): \$8,084.00**
- c. **Task 10 Develop Capital and Operating Budgets (96 hours): \$22,160.00**

Labor Rate Table:

Labor Category	Hourly Rate
Principal in Charge	\$350.00
Project Manager	\$275.00
Project Manager	\$250.00
Senior Engineer/ SPM	\$210.00
Engineer	\$180.00
Field Engineer	\$180.00

The Consultant's requests for payment shall be submitted on properly prepared invoice forms with attachments showing actual hours worked and rates applied. Overtime or any other expenses shall not be invoiced unless previously authorized by the DAS in writing. The Consultant shall certify that each amount invoiced is both accurate and commensurate with the work performed for the State under this contract. The State shall have the right to audit records associated with said task letter at any reasonable time. It is specifically understood that the pre-approved hourly rates shall only apply for the period of time that the person is actually working on the project.

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3. Submittals/Time Period

The Consultant shall provide the work pursuant to an agreed upon time frame as shown in the table below.

Task	Estimated Weeks from NTP
Phase 1 Screening Assessment	
Internal Mobilization	1
Study Kickoff – Client Workshop #1	2
Deliverable – Memo confirming scenarios, inputs and assumptions confirmed by the State	3
Regulatory Evaluation	5
Demand Side Evaluation	10
Distribution & Geothermal System Evaluation	10
Supply Side Evaluation	11
Deliver Results of Initial Screening Assessment	14
Client Feedback & Confirm Advancement to Feasibility Phase	15
Phase 2: Feasibility Study	
Detailed operating budgets	16
Reconvene w/ regulatory authorities and refresh related assumptions, costs, schedules	16
Advance level of design	18
Advance cost estimates	19
Prepare Final Report/ Exec Presentation	20
Deliver Final:	21

ANNUAL CERTIFICATION

If the aggregate value of the subject contract is \$50,000.00 or more, including all amendments and/or commission letters, then the On-Call Multi-Disciplinary Engineer shall annually submit electronically, on or within two (2) weeks of the anniversary date of the execution of the contract, a completed Gift and Campaign Contribution Certification and notify the DAS Legal Unit that it has been uploaded. Said certification shall be uploaded on the Department of Administrative Services' website. For the purposes of this section, the execution date of the contract shall be the date the Commissioner of DAS signed the contract.

All the terms and conditions of the subject on-call contract and any prior task letters for the same project under the same on-call contract shall remain in full force and effect except as modified herein.

Please indicate your acceptance by signing this original task letter and returning it to the Department of Administrative Services, Construction Services, Office of Legal Affairs, Policy and Procurement, 450 Columbus Blvd., Ste. 1307, Hartford, CT 06103.

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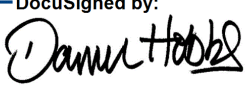
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You are now authorized to proceed with the above-noted work.

Sincerely,

DocuSigned by:

25EC340DBE54445...
Darren Hobbs
Deputy Commissioner

4/11/2023
Date

Source Once Inc. (DE)

DocuSigned by:

5350D1CF46CC460...
ACCEPTED: Consultant
4/12/2023
Date

Louis Schoen
Print/Type Name
Vice President
Title

DH/nar

xc: State Properties Review Board
User Agency Representative – Nick Garcia
Managing Director Strategic Redevelopment – Noel G. Petra
Chief Architect – David Barkin
Director Construction Support Services – Craig Russell
Fiscal Administrative Supervisor – Glenn Knapsack
On-Call Contract File
Team File