

ARPA-E PROJECT SELECTIONS – METHANE OPPORTUNITIES FOR VEHICULAR ENERGY (MOVE) TECHNICAL DESCRIPTIONS

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These projects have been selected for negotiation of awards; final award amounts may vary.

Lead Research Organization	Amount	Lead Organization Location (City, State)	Project Title Project Description
Center for Electromechanics - University of Texas at Austin	\$4,300,000	Austin, TX	<p>Single-Piston Four-Stage Linear Home Natural Gas Compressor</p> <p>The University of Texas at Austin will develop an at-home natural gas refueling system that compresses gas with a single piston. Unlike current four piston compressors, UT Austin’s highly integrated single-piston system will use fewer moving parts, leading to a more reliable, lighter, and cost effective compressor.</p>
Colorado State University	\$700,000	Fort Collins, CO	<p>Engine-Integrated Natural Gas Compressor</p> <p>Colorado State University will develop a vehicle-based natural gas refueling system that will use the vehicle engine itself to compress natural gas. The engine will have the ability to both power the vehicle as well as compress natural gas for storage. Drivers will be able to connect their vehicle to any natural gas line for fast, convenient refueling.</p>
Eaton Corporation	\$3,400,000	Milwaukee, WI	<p>Liquid-Piston Isothermal Home Natural Gas Compressor</p> <p>Eaton Corporation will develop an at-home natural gas refueling system that will use a liquid, which acts as a piston, to compress natural gas. Eaton will engineer a heat-transfer material that controls the temperature during compression and improves efficiency. This liquid compression system will eliminate the need for costly high-pressure piston seals that are used in conventional gas compression.</p>
Ford Motor Company	\$5,500,000	Dearborn, MI	<p>Adsorbed Natural Gas System for Vehicles</p> <p>Ford Motor Company will engineer a high-performance natural gas storage tank that utilizes an innovative external framework and internal porous materials. This comprehensive design will lower pressure and cost while increasing the performance of the fuel system.</p>

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Gas Technology Institute	\$1,500,000	Des Plaines, IL	<p>Engineered Adsorption Materials for Gas Storage</p> <p>The Gas Technology Institute will identify new porous materials for low-pressure gas storage tanks using their computational screening tool. This approach enables the rapid identification of low-cost, high-performance materials that will speed the development of low-pressure natural gas tanks for vehicles.</p>
Gas Technology Institute	\$875,000	Des Plaines, IL	<p>Nano-Valved Materials for Natural Gas Storage</p> <p>The Gas Technology Institute will develop a unique low-pressure natural gas storage tank for light-duty vehicles using a thin tailored shell to dramatically increase storage capacity while driving down cost. GTI's innovative shell contains valves that can be opened and closed on demand to allow for vehicle refueling, driving, or storage.</p>
General Electric Global Research	\$1,800,000	Niskayuna, NY	<p>Chilled Natural Gas for At-Home Refueling</p> <p>General Electric Global Research will develop an at-home natural gas refueling system that will chill, densify, and transfer compressed natural gas more efficiently to light-duty vehicles than conventional refueling systems. This fast-fueling design has very few moving parts, will operate quietly, and will be virtually maintenance-free.</p>
OtherLab, Inc.	\$250,000	San Francisco, CA	<p>Safe, Conformal, Gas Intestine Storage</p> <p>OtherLab will develop a high-pressure natural gas tank for light-duty vehicles using small diameter tubes tightly wound into a tank shape. Like human intestines, these small tubes will fit tightly into virtually any shape for efficient storage. Gas intestine storage tanks could be as light as today's carbon fiber tanks at one fifth the cost.</p>
Pacific Northwest National Laboratory	\$600,000	Richland, WA	<p>Superplastic-Formed Gas Storage Tanks</p> <p>Pacific Northwest National Laboratory will develop a low-cost, conformable natural gas tank for light-duty vehicles utilizing the same metal forming techniques used to fabricate high-strength cruise missile fins. This ultralight tank incorporates high-strength internal strut technology that efficiently fits into a vehicle.</p>

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REL, Inc.	\$3,000,000	Calumet, MI	<p align="center">Shape Conformable Foam Core Gas Tanks</p> <p>REL will develop a low-cost, conformable natural gas tank for light-duty vehicles that has an internal foam core. Unlike normal hollow pressure vessels that are cylindrical, this internal foam design will allow tanks to be formed into any shape. The foam core will enable higher storage capacity than current carbon fiber tanks at one third the cost.</p>
SRI International	\$875,000	Menlo Park, CA	<p align="center">Container-less Natural Gas Storage</p> <p>SRI International will develop low-pressure natural gas storage tanks for light-duty vehicles using porous materials that enable low pressure storage at high energy densities. SRI's unique approach using porous carbon materials will provide structural strength and high surface area for gas adsorption that will entirely eliminate the need for a costly external tank.</p>
Texas A&M University	\$3,000,000	College Station, TX	<p align="center">Advanced Porous Materials for Vehicular Natural Gas Storage</p> <p>Texas A&M University will develop highly adsorbent materials for low-pressure natural gas storage tanks. These low cost materials enable low-pressure natural gas to efficiently adhere to their engineered porous structures, storing gas at very high energy densities.</p>
United Technologies Research Center	\$4,400,000	East Hartford, CT	<p align="center">Low Cost Modular Natural Gas Tanks</p> <p>United Technologies Research Center will engineer a low-cost natural gas tank for light-duty vehicles using modular designs and low-cost construction materials, allowing tanks to be manufactured into shapes that easily fit into the tight spaces of light duty vehicles. This modular design will replace today's bulky storage tanks in light duty vehicles at a lower cost and without sacrificing driving range.</p>