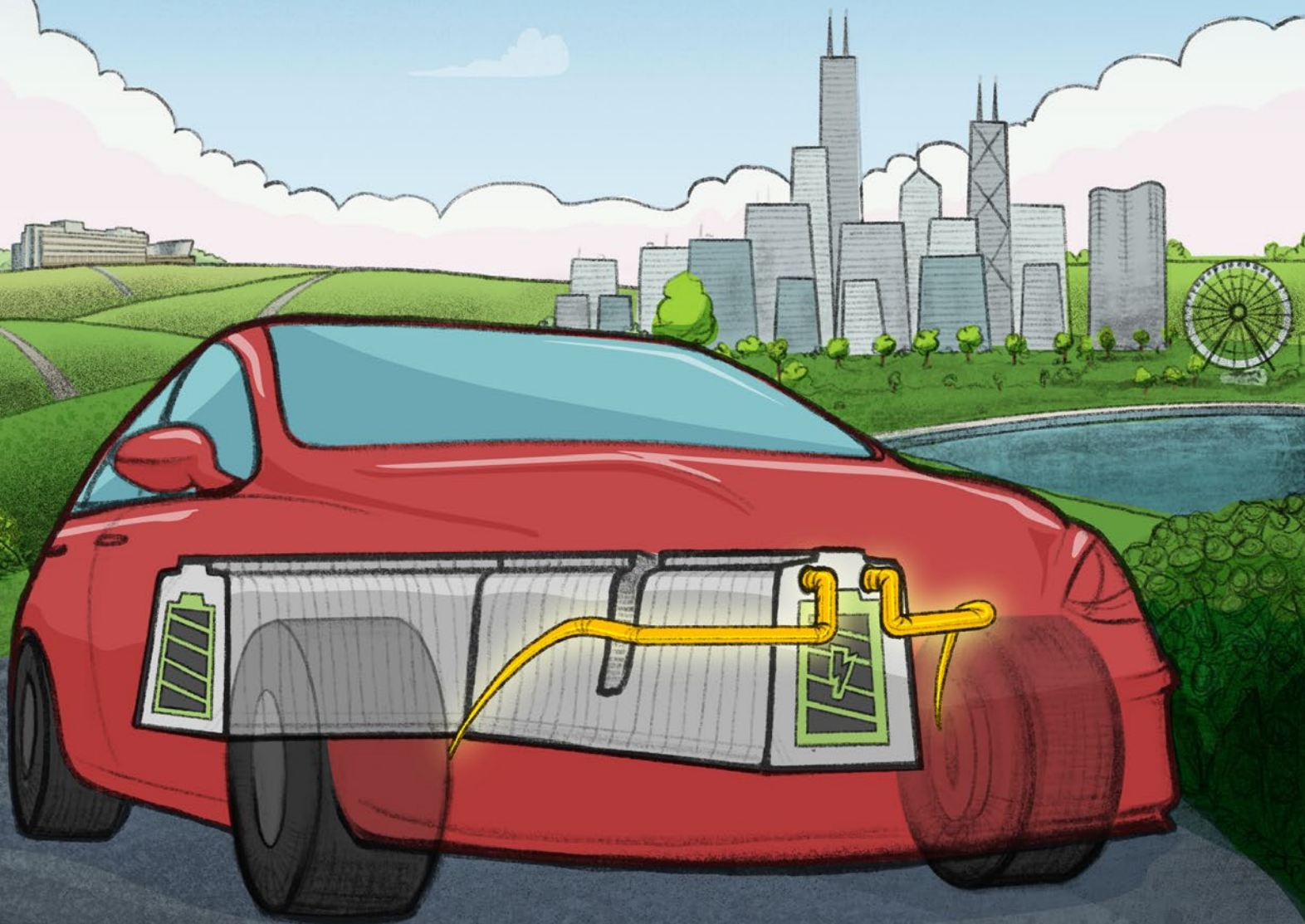


ADVANCING AMERICA *through* TECHNOLOGY TRANSFER

# ARGONNE NATIONAL LABORATORY

**ENERGIZING *the* ELECTRIC CAR INDUSTRY**



**NICKEL MANGANESE COBALT BATTERY TECHNOLOGY**

***CLEANER POWER,  
REDUCED EMISSIONS, and  
NEW MANUFACTURING JOBS***

Argonne   
NATIONAL LABORATORY

U.S. DEPARTMENT OF  
**ENERGY**

Office of  
**TECHNOLOGY TRANSITIONS**



## How do we transform the energy storage industry and create jobs?

Scientists at Argonne National Laboratory (ANL) invented a lithium-ion battery cathode chemistry delivering revolutionary improvements over earlier cathode technologies. The Nickel Manganese Cobalt (NMC) blended cathode structure provides the greatest energy storage capacity available along with improved safety and increased battery lifespan all in the smallest and lightest package on the market.

Nearly two decades and various commercial licensing agreements later, NMC is found in applications ranging from electric cars to power tools, has created hundreds of American jobs, and is helping pave the way to the next generation of large-scale energy grid storage.

### ANL at a Glance

Argonne's origins trace to the University of Chicago, where in 1942, Enrico Fermi led a team of 49 scientists in creating the world's first self-sustaining nuclear chain reaction. Argonne has built on Fermi's pioneering legacy by delivering pivotal discoveries and disruptive technologies that meet national needs for sustainable energy, economic competitiveness, and security. Boasting world-class talent and a powerful suite of unique facilities and tools, Argonne's multidisciplinary scientists, engineers, and collaborators are advancing our understanding of the world around us, discovering new materials and applications, and driving next-generation super-computing.

### U.S. Department of Energy Laboratories

The 17 U.S. Department of Energy (DOE) National Laboratories comprise a preeminent federal research system that executes long-term government scientific and technological missions, often with complex security, safety, project management, or other operational challenges. The National Laboratory system produces the scientific research needed to develop national energy policy and solutions allowing DOE to be one of the largest supporters of technology transfer in the federal government.

**NMC is the safest, best performing, and most cost-effective technology among its peers**

#### Technology

NMC offers a 50% to 100% increase in energy storage capacity over earlier cathode technologies.

#### Industry

NMC technology was licensed to four international corporations, creating hundreds of American jobs.

#### Awards

Argonne was a recipient of the 2010 "Deals of Distinction" Award from the Licensing Executives Society, noting the potential of NMC to improve the environment and spur economic growth.

### Contact Us

The scientific discovery highlighted on this poster is just one of DOE's many successes advancing America.

Learn more about available resources and partnering opportunities with the National Labs by visiting:

[www.energy.gov/technologytransitions](http://www.energy.gov/technologytransitions)

### Technology Transitions

The mission of the Office of Technology Transitions (OTT) is to expand the commercial impact of the DOE's research and development portfolio to advance the economic, energy, and national security interests of the Nation. The office develops the Department's policy and vision for expanding the commercial impact of its research investments, and streamlines information and access to DOE's National Labs and sites to foster partnerships that will move innovations from the labs into the marketplace.

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