

Highlights from year 4



Four of our graduate students travelled abroad to work with Oxford University in England, Oak Ridge National Laboratory in Tennessee, the University of Messina in Italy and Ohio State University respectively.



We partnered with Natural Resources Canada and the National Research Council to bring together 50 experts from around the world for a clean energy ministerial event in Vancouver in May 2019.



We hosted our first energy storage marketplace at Leading the Charge Conference in June 2019, where researchers pitched their projects to an industrial audience.



Bala Venkatesh designed an award-winning utility pole-mounted energy storage system.



Claudio Cañizares developed a modular energy storage-enhanced hybrid power flow controller that makes use of refurbished grid components.



F. Handan Tezel designed an adsorption-based thermal energy system for space heating and cooling applications.



Ian Rowlands created an online database of Canadian energy storage activity for industry members, students, government and the public.



Liuchen Chang filed a patent for a single-phase source inverter with voltage-boosting and power-decoupling capabilities. He also designed a converter for battery storage systems to integrate power system support functions.



Lukas Swan developed and tested a mixed battery array that consisted of used electric vehicle batteries of various capabilities.



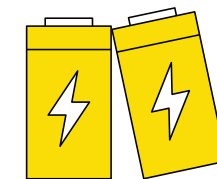
Miguel Anjos developed a market-ready double façade model for thermal storage that naturally integrates into building structures.



Marc Secanell designed a composite flywheel energy storage system that can be used for potential vehicle technology and grid-scale applications.



Reza Iravani developed a supervisory control for multiple grid-connected microgrids with battery systems.



To learn more, please visit ryerson.ca/nestnet

You can also contact:
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NSERC Energy Storage Technology Network

2018–2019
Annual Report
Year 4



Centre for
Urban Energy



Introduction

Ryerson University – through its Centre for Urban Energy – and the Natural Sciences and Engineering Research Council of Canada (NSERC) are proud to lead a five-year, \$8.7 million pan-Canadian network of 15 universities and 26 industry and government partners focused on the future of energy storage – an essential technology in the global transition to clean energy.

The NSERC Energy Storage Technology Network (NESTNet) collaboratively explores many different types of energy storage, including flywheels, lithium-ion batteries and compressed air, while determining how best to integrate these technologies into the electricity grid. In addition, researchers consider the implications arising from the increasing adoption of energy storage and how consumers will perceive, adopt and interact with these technologies. By partnering with the private sector, NESTNet enables directed progress – without duplication of efforts – towards a strong domestic Canadian energy storage industry that is also competitive in the global marketplace.

Shared message

Four years into our five-year mission, we continue as a network to work hard to deliver the technologies that will transform our energy systems and foster the talent required to thrive in the clean energy economy of the future.

We are immensely proud of the progress made so far by our research teams across Canada and would like to take this opportunity to thank everyone for their considerable and ongoing efforts.

We invite you to learn more about some of the network's key outputs over the following pages. For those wanting to go more in-depth, please head to ryerson.ca/nestnet.



Neetika Sathe

Neetika Sathe
Board Chair



Bala Venkatesh

Bala Venkatesh
Network Director

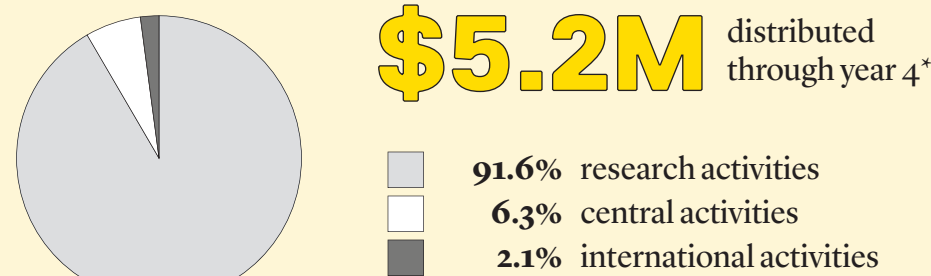
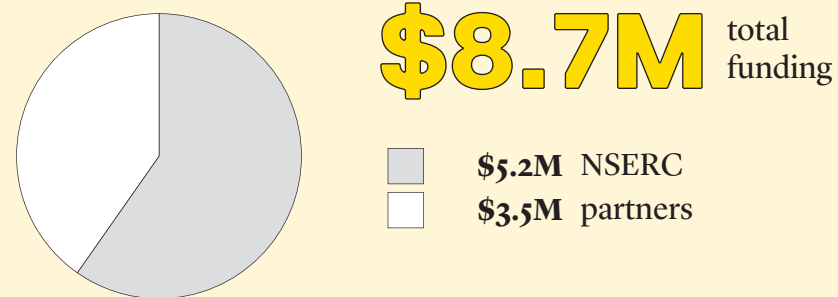
By the numbers: End of year 4

Membership



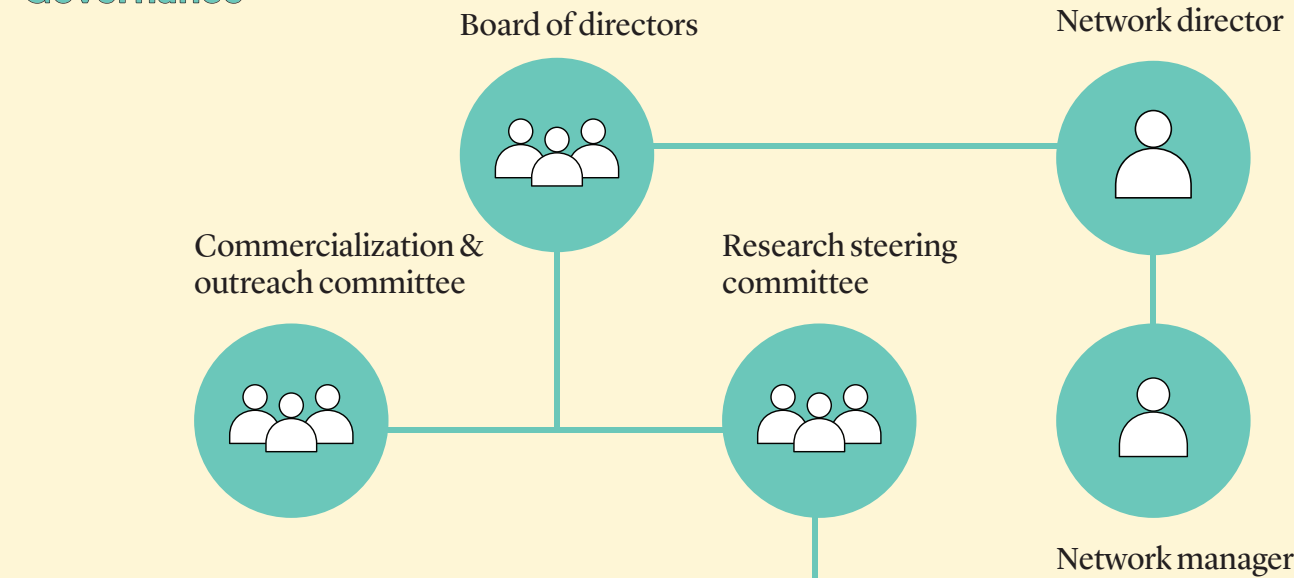
For a full list of members, visit ryerson.ca/nestnet/partners

Funding

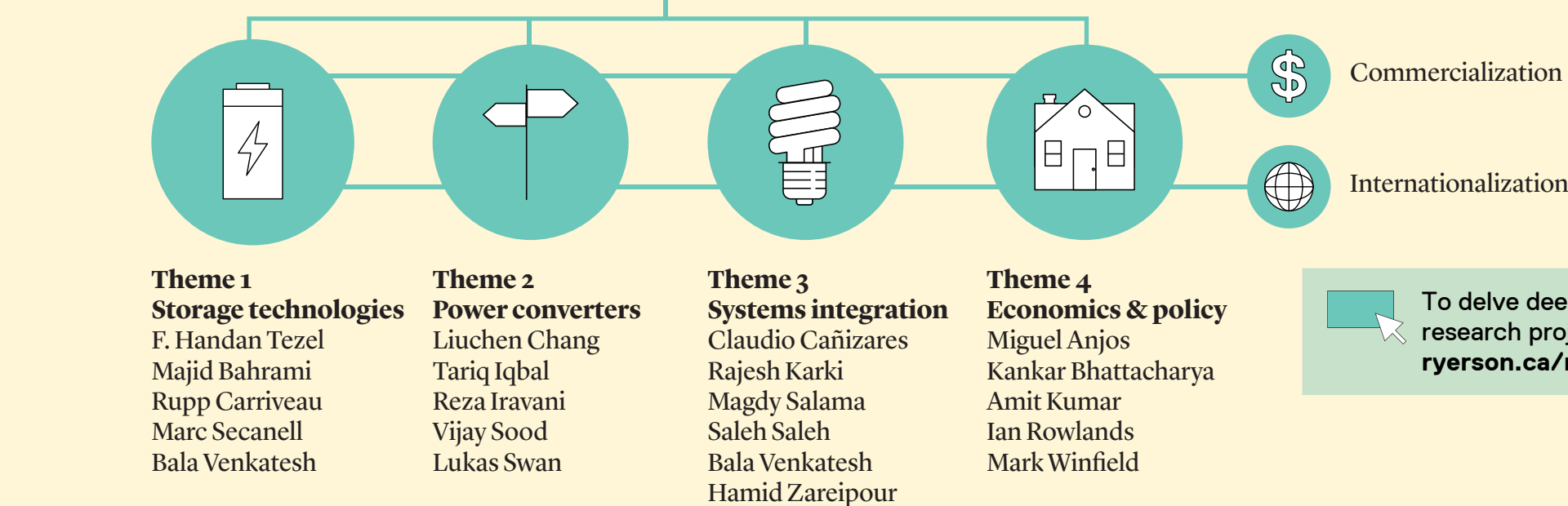


*Numbers are extrapolated from financial data to March 31, 2019.

Governance



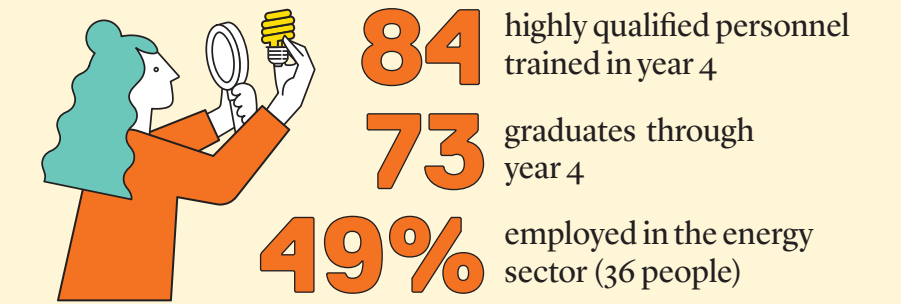
Research



Save the date! NESTNet Week, June 15-20, 2020 Ryerson University

To delve deeper into all 24 research projects, visit ryerson.ca/nestnet/research

People



"NESTNet brings the most intelligent minds from across Canada together to solve complex problems in the energy storage research area, that no individual researcher, research group or university can solve by itself."

Ye H. Carrier, Postdoctoral Fellow, University of Ottawa

"NESTNet provides invaluable opportunities for students to connect with other researchers across Canada and beyond. These international collaborations will allow me to go beyond my original project goals as well as advance my future career in energy storage."

Chris White, PhD Candidate, Dalhousie University

Events



Outputs (through year 4)

