



EUGENE LITVINOV

1950–2020

Elected in 2020

“For development of optimization mathematics for new electricity markets and innovative applications for electric grid control, visualization, and planning.”

BY GORDON VAN WELIE, ELLEN FOLEY,
AND VAMSI CHADALAVADA

EUGENE LITVINOV, chief technologist for ISO New England Inc., died September 25, 2020, at age 70. He lived life to the fullest, and his legacy will continue through the impacts of his pioneering work in the electricity industry and his relationships with colleagues, peers, and friends.

Born July 1, 1950, in Kiev, Ukraine, Eugene received his master’s in electrical engineering from the National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute” in 1973 and his PhD in computer-based power system control from Ural State Technical University in 1987. He worked for two decades at Kiev’s Power Systems & Network Research Design Institute as a senior researcher and engineer.

In 1991 he emigrated with his family as a refugee from the Soviet Union. In the United States he joined the New England Power Pool, predecessor of ISO New England, as a senior engineer. He later became a US citizen and volunteered to help other refugees establish fruitful lives in western Massachusetts through the Jewish Family Services organization.

In a career spanning 28 years, Eugene led ISO’s technical effort in support of the regional policy goal of restructuring

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the electric system. He was a visionary both for the company and the industry at large, transforming theoretical auction concepts and high-level regulatory tariffs into successful online market platforms for wholesale electricity. His unique blend of skills in power system control, optimization, and software design, as well as his technical leadership, enabled the New England region to implement “best-in-class” market design and power system control algorithms, thereby improving the efficiency and reliability of the region’s power system serving 14.5 million people.

Eugene collaborated extensively with both industry and academic partners around the world to seek optimal solutions to real-world power system problems. His optimization mathematics and designs were recognized and adopted by other independent system operators, vendors that support wholesale power systems and markets, and the Federal Energy Regulatory Commission (FERC), advancing the level of efficient market structures across the industry. His contributions were fundamental in ensuring a progressive and stable wholesale market that attracted more than \$16 billion of investment in new generating resources to New England and \$20 billion in transmission and distributed resources.

Following are just some of his remarkable accomplishments:

- The industry’s first nodal energy market that included losses and congestion
- The first cooptimized reserve markets in the real-time market, with operating reserve demand curves
- Best practice enhancements to enable fast-start resources to set energy prices, as recognized by FERC
- State-of-the-art design of nested, locational, convex, capacity market demand curves that recognize the marginal reliability contribution of resources in adjacent capacity zones
- A pioneering optimization approach in unit commitment and economic dispatch
- New algorithms and applications designed for phasor measurement unit (PMU) technology, including the

development of oscillation source location using a dissipating energy flow method and on-line voltage stability analysis

- Use of cloud computing for power system control and planning applications in the ISO environment
- A new regional market settlement system, one of the most successful settlement architectures in the industry, with the first implementation of semiweekly and 5-minute settlements
- Creation of a mathematical framework to optimize power flow between two regional systems, New England and New York, in relation to wholesale market prices, known as coordinated transaction scheduling; wholesale market monitors recognized this implementation as the most efficient in the industry
- Coleader of a novel market design to address energy scheduling and storage problems in an energy-constrained system and marketplace.

Eugene was also the author or coauthor of many academic papers and research articles for industry journals, winning several best paper awards from the IEEE Power and Energy Society (PES). In addition to his NAE membership, he was an IEEE fellow; a member of the IEEE PES Fellowship Committee, CIGRÉ (International Council on Large Electric Systems), and the PSERC (Power System Engineering Research Center) Industrial Advisory Board; chair and member of ARPA projects; and an editor of *IEEE Transactions on Power Systems*.

Eugene was a leader in every facet of his life, a visionary who pushed the envelope in the electricity industry, and who rallied his colleagues and staff to be the best they could be, both professionally and personally. He made friends all over the world, and his influence and imprint on the industry will endure as his legacy is carried on by all who knew, admired, and loved him.

Eugene was a loving husband, father, and grandfather, and will be dearly missed by his wife, Yelena; daughters Anna and Alexandra; and three grandchildren.