
INDEPENDENT ELECTRICITY SYSTEM OPERATOR

2021 Annual Report

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Message from the President & CEO



Stepping into the role of President and CEO of an organization like the Independent Electricity System Operator (IESO) in the midst of a global pandemic has provided me with a unique vantage point from which to consider the essential nature of our operations. Each and every day, Ontario residents, businesses, institutions and communities count on us to ensure electricity is available where and when they need it.

Since joining the IESO in mid-2021, I have experienced first-hand the scope of our work, the expertise of our employees and the importance of sector collaboration to achieve tangible results. Despite the many challenges associated with the ongoing pandemic, the IESO made considerable progress on key projects and initiatives in 2021. Knowing the strategic importance of a reliable, sustainable and affordable supply of electricity to the well-being of all Ontarians, we continued to take all the necessary precautions to protect our workforce – and, by extension, the grid.

Ensuring the province has sufficient capacity and energy to meet demand is our highest priority. After years of relative stability, we now face emerging needs in the coming years. Our most recent Annual Planning Outlook is forecasting demand to grow faster than previously expected due to economic expansion and electrification, among other factors. At the same time, available supply is decreasing as a result of nuclear refurbishments, the retirement of the Pickering generating station, and the expiration of thousands of supply contracts.

After considerable engagement with the stakeholder community, we established a Resource Adequacy Framework in 2020 to clearly identify our requirements and our plan to ensure those needs are met in a cost-effective manner. We put this framework

into action in 2021 by releasing the first Annual Acquisition Report, which provided guidance on how the IESO will secure supply. This includes leveraging the annual Capacity Auction to acquire a diverse set of resources that help meet our needs in the near term and firming up plans for two RFPs to be issued in 2022 – one to meet medium-term needs and the other to meet requirements over the longer term.

In parallel, we have also made good progress on our Enabling Resources Program. This is a broad, sweeping initiative that, when fully implemented, will enable existing electricity resources to provide the full suite of services they are capable of. That, in turn, will increase competition in our markets, drive down costs, and contribute to the sustainability of our grid. This critical work will support the integration of hybrid storage-generation resources, as well as energy storage and other distributed energy resources (DERs), into the IESO-administered markets.

Learning how to capitalize on the opportunities and address the challenges we face has never been more important. For this reason, the IESO has amped up its presence in the innovation space in recent years, enabling us to ensure today's energy needs are met, while anticipating and planning for the electricity system of the future.

With support from our Grid Innovation Fund (GIF), we have created a test bed for technologies with the potential to increase electricity reliability, affordability and customer choice. Through these strategic investments, the GIF has emerged as a vital contributor to advancing sector-wide understanding of issues and opportunities that exist in Ontario. Looking ahead, we expect to learn more when other projects – such as vehicle-to-grid charging systems, DER forecasting and visibility tools, and artificial intelligence-enabled energy management systems – come into service.

In the meantime, we are continuing to move forward with the Market Renewal Program (MRP). By redesigning Ontario's wholesale electricity market to eliminate inefficiencies and encourage greater competition, MRP is expected to deliver \$800 million in net benefits in the first 10 years alone.

Extensive engagement with stakeholders on the MRP took place in 2021, with stakeholders meeting throughout the year to provide guidance and feedback to the IESO.

In addition to working with our traditional stakeholders, we continue to broaden our reach and connections. Sustainability and reducing greenhouse gas emissions has become a driving influence in our sector. Here in Ontario, more than 30 municipalities have called for the phase out of gas-fired power generation by 2030. To assess the feasibility of this transition, the IESO undertook a major research project, which showed that deadline was not feasible and would expose the province to blackouts and significant electricity price increases.

Yet this was only a start. The Minister of Energy has also asked that we further evaluate a moratorium on the procurement of new natural gas generating stations and develop achievable pathways to decarbonization in the electricity sector, with a report due in November 2022.

Given the broad importance of this work, we will continue our efforts to expand the scope of our engagement activities to include new and existing sectors and audiences. Eliminating the use of natural gas for power generation has implications across many sectors, and it cannot be considered in isolation. We will also continue our collaboration with sector partners like the Ontario Energy Board in areas of shared interest, including innovation, emerging technologies and consumer choice, among others.

The world around us is changing quickly – and a reliable, affordable, sustainable supply of electricity has never been more important. It will support the electrification of transportation and industrial processes, reducing total provincial emissions. It will help municipalities and Indigenous communities achieve their stated economic and sustainability goals through local energy projects. Furthermore, it will stimulate innovation, support job creation and enable new business opportunities.

The work done by the electricity sector has never been as challenging – or as rewarding. We are at a pivotal point in Ontario's history, and as the province emerges from the pandemic and pursues new opportunities for growth, the IESO will be there to ensure the province has the electricity it requires to power progress.



Lesley Gallinger
President & CEO

2021 Year in Review

A secure, affordable and sustainable electricity service is central to the well-being of Ontario's economy and communities. It powers the province's homes, businesses and institutions, enabling economic development, job creation, social engagement and quality of life. With a broad mandate and vision for the sector, Ontario's Independent Electricity System Operator (IESO) plays a vital role in ensuring the province has sufficient energy to meet its needs.

To fully deliver on this mandate and position Ontario for growth and prosperity, the IESO has relationships that span the sector. In 2021, we worked with partners to take pragmatic and responsible steps to ensure Ontarians' energy needs are met in the most cost-effective manner. This included a wide range of stakeholders from across the electricity sector, regional and local governments, trade and business associations, academic institutions and technology developers, as well as Indigenous communities and organizations, and many others. By engaging both broadly and deeply, we strive to ensure our decisions consider and balance their priorities and perspectives.

Working for all Ontarians

Electricity is something Ontarians count on each and every day. The IESO has now closed out a second year of successful market and system operations during a global pandemic. Despite the challenging environment, we continue to effectively plan for the future and operate for today, while simultaneously supporting the ongoing transformation of the electricity grid and market.

As the economic recovery from the pandemic gained momentum in 2021, the IESO continued to take steps to prepare for the impact of economic growth and electrification of vehicles and industrial processes on the need for electricity. This demand growth is happening at the same time as our supply mix undergoes significant change, with nuclear refurbishments underway, the Pickering nuclear plant set to retire mid-decade, and thousands of generator contracts expiring.

The IESO continues to take action to address these needs at the provincial grid level, and at a regional level. For example, Southwest Ontario in particular is experiencing rapid growth in demand, and the IESO is working with businesses and communities to ensure the region has enough power to support a thriving greenhouse sector using an integrated array of transmission, generation, energy efficiency and other innovative solutions.

The changes underway are affecting every aspect of our business – and the sector as a whole. Three major trends have emerged in recent years – decentralization, decarbonization and digitalization – and all are having an impact on the way the IESO manages Ontario's power system. Working with sector partners, we made important strides towards enabling local resources to operate in our markets in 2021. We also initiated research and planning work that will support long-term efforts to decarbonize the electricity sector, and have sought opportunities to leverage industry data and drive deeper digitalization through targeted investments in innovation.

Local electricity solutions

The IESO continues to observe growth in small-scale local generation, storage and other distributed energy resources (DERs). There are already at least 5,000 megawatts (MW) deployed in Ontario, and this number is expected to increase for years to come. These resources can provide more control and choice for energy consumers, additional revenue streams for businesses, and economic development and sustainability opportunities for communities. They can also help defer or avoid investments in new transmission and distribution infrastructure.

The IESO has a number of interrelated DER-focused initiatives underway to determine how to cost-effectively unlock the value DERs can provide to Ontario's electricity system. To the greatest extent possible, this work will be accelerated so DERs can achieve their full potential. In 2021, the IESO launched a DER Roadmap that sets out a pathway for full market integration within five years. The IESO and the Ontario Energy Board also issued a joint targeted call for innovative research and demonstration projects that have the potential to provide value to consumers and the grid.

Support for innovation

Facilitating, supporting and promoting innovation is another key priority for the IESO. Our Grid Innovation Fund (GIF) is an important test bed for the sector by funding projects that either enable customers to better manage their energy consumption or that reduce the costs associated with operating the provincial grid. Since its inception in 2005, the GIF has supported 260 projects, including 18 announced in 2021. These projects focus on many of today's trending topics, including electric vehicles, energy efficiency and energy management, DER integration, indoor agriculture and community planning.

Previous years' projects are already delivering results, with several community microgrids coming into service, residential batteries being deployed to meet local needs, and various EV charging solutions being tested across different sites.

Towards a decarbonized future

Reducing greenhouse gas (GHG) emissions in the electricity sector – as well as supporting decarbonization of other sectors — is critical to long-term sustainability.

Less than a decade ago, Ontario became the first jurisdiction in North America to eliminate coal-fired generation. Today our power system is one of the cleanest in the world, with most energy produced by nuclear generating stations or renewable resources that include hydroelectric, wind, solar and biomass facilities.

In an effort to support the conversations taking place across the province about the role of gas generation, the IESO released a study on the feasibility of eliminating gas-fired generation by 2030, a deadline proposed by a number of Ontario municipalities advocating for change. The report concluded this transition was not feasible within the time allowed, and would expose the province to a very high risk of blackouts and substantial cost increases. However, the research did provide valuable insights into the future potential pathways to decarbonization. The IESO will build on this analysis to develop a follow-up report, scheduled for release in late 2022.

We will do this work with an eye on growing electrification, which is expected to cause significant increases in demand for electricity in the coming years. Our 2021 Annual Planning Outlook indicates that broad electrification will lead to significant economy-wide GHG emissions reductions in Ontario over the next two decades. Electrifying technologies across various sectors, particularly transportation, manufacturing and industry, could mean real progress in reducing overall provincial emissions.

Energy efficiency options

One of the hallmarks of a clean, green power system is energy efficiency, which is the lowest-cost resource available. In 2021, the IESO celebrated 10 years of delivering energy-efficiency programming under the Save on Energy brand. In that time, our programs reached homes and businesses in all sectors across Ontario, saving nearly 16 terawatt-hours (TWh) of electricity. Some 250,000 customers have completed more than 80 million energy-efficiency actions over the past decade, which have resulted in energy and cost savings, reduced GHG emissions and avoided costly infrastructure development.

Demand response and energy efficiency continue to help reduce system peaks. For example, the reinstated Industrial Conservation Initiative reduced peak demand by up to 1,200 MW during a prolonged heat wave in August 2021. Energy efficiency programs delivered by the IESO between 2008 and 2021 contributed an estimated 2,057 MW of persisting demand savings last year. That figure includes an estimated 109 MW of incremental demand savings from measures installed in 2021, which is enough to power roughly 200,000 homes.

The IESO also completed the first year of the 2021-2024 Conservation and Demand Management Framework, and successfully launched key programs. These include the Local Initiatives Program to focus on local system needs and the Energy Affordability Program to support income-qualified consumers with managing their electricity costs.

Powering community development

From the IESO's vantage point, engaging with communities is an increasingly important aspect of our work. It's imperative that we understand local needs to ensure the province has adequate supply now and in the future. To properly conduct power system planning, we need to understand where development is happening. This information enables us to understand the electricity impacts of adding new homes, businesses, schools, hospitals and transit to the existing system.

It is also important for us to understand local priorities and objectives. To that end, we are working with municipal government officials, Indigenous communities, transmitters, distributors, industry associations and other partners to collectively identify the best options for meeting local energy needs. In addition to traditional poles-and-wires infrastructure, these options may also include local energy solutions that include small-scale renewable generation, energy storage, energy efficiency, microgrids and the like.

For the IESO to make the best planning decisions, information and ideas must flow in both directions. We need to understand what's happening at the local level and participants in our engagements need to understand the bigger picture and the various issues impacting local, regional and province-wide electricity service.

We work across multiple channels to ensure participants understand the energy landscape and have the requisite knowledge to provide meaningful input into our planning processes. In 2021, there were more than a dozen active regional and bulk planning engagement initiatives underway, resulting in 24 public webinars that attracted more than 1,200 participants in total. These engagements produced final reports that mapped out plans and priorities for the affected regions.

We also hosted a province-wide Regional Electricity Network Forum that attracted more than 600 participants. Our five regional networks provide an important opportunity for community members to hear first-hand about issues or innovations impacting Ontario's electricity sector and provide input into future electricity planning. The regional networks have grown quickly, with membership now exceeding 3,100.

In 2021, we also continued to enhance and expand interaction among network members through IESO Connects, an interactive online engagement portal launched in 2020. This platform allows members to keep in touch with us and with others in their region, especially where local energy projects are concerned. Through these channels and others, residents can have an effective voice in shaping their region's energy future and meeting local objectives related to economic development and sustainability.

Building Indigenous energy capacity

We launched our first Corporate Indigenous Policy in the fall of 2020 as part of our ongoing efforts to power positive change. It brings a higher level of visibility to our commitments and accountability to our actions. At a high level, the objective of the policy is to build the capacity of Indigenous peoples and communities and create opportunities in support of fair and equitable participation in the electricity sector. The policy guided our efforts in 2021, and this work is already delivering results.

Indigenous communities and organizations are pursuing and leading major energy projects across the province. This can be a highly effective way to drive local economic development and job creation and achieve sustainability goals. The IESO views Indigenous communities and organizations as valued partners that provide key contributions to planning, energy efficiency, renewable generation and other aspects of the IESO's work to manage the system. Through ongoing dialogue, the IESO works closely with Indigenous communities and organizations to identify opportunities for greater participation in Ontario's energy sector and to provide the necessary supports for long-term success.

Our four Energy Support Programs remain the cornerstone of our work in this area. In 2021, we confirmed \$4.8 million in funding for 47 Indigenous communities and organizations to support projects that include innovative renewable generation and solutions, skills development and training for Indigenous youth and women, and solar charging stations for electric vehicles in communities.

The Community Energy Champion program is a core element of our capacity building efforts. This innovative program provides funding and training to First Nation and Métis communities and organizations to hire a designated champion to help plan, implement and evaluate energy-related priorities. Since the program was initiated in 2018, more than 60 full-time positions have been created, and funding recipients have received training on a broad range of topics, including community energy benchmarking, energy efficiency and conservation, energy auditing and project management.

To help create energy champions of the future and equip them with the skills and capabilities they will need to pursue rewarding careers, we have also partnered with Indspire to offer post-secondary education scholarships in energy-adjacent fields of study, and collaborated with Indigenous Clean Energy on Generation Power, an innovative co-op program designed to engage both Indigenous youth and energy sector employers, positioning Indigenous leadership as an essential component of Canada's clean energy transition.

Recognizing the value of lived experience, we also provide opportunities for communities and their respective champions to learn from each other. In addition to establishing a dedicated section on IESO Connects, our online engagement portal, we continue to host regular training events and an annual First Nations Energy Symposium.

Collaborating with sector partners

Building on the momentum achieved over the past decade to transform the system, new technologies continue to be developed, new participants are entering the market, and new opportunities for collaboration across the sector are emerging. The IESO has a unique and important position from which to witness – and facilitate – this change. Through a variety of different mechanisms, we work with partners from across the sector to optimize the performance of Ontario’s wholesale electricity market, plan the system so it meets current and future energy needs, and protect vital grid assets.

Deriving value from the market and delivering value to the sector requires a rigorous and robust engagement framework. To that end, the IESO has established a standard process across all of its active engagements so that stakeholders know what to expect, and how to participate. This creates an opportunity for participants to provide input and feedback about proposed decisions or changes that affect them.

In 2021, the IESO had 21 active engagements underway. Reflecting the volume and breadth of issues facing the sector, these engagements covered different aspects of system planning, real-time operations, enabling new resources, driving innovation, promoting energy efficiency, and evolving the wholesale electricity market. In total, these events attracted more than 5,600 participants, who played an integral role in helping us consider all perspectives and make the best decisions.

Seeking input from stakeholders and communities is one way to ensure we consider other perspectives on specific issues or challenges. In 2021, for example, we worked closely with the stakeholder community to develop and design our Medium-Term Request for Proposals as well as the Gas Phase-out Impact Assessment that will underpin our Pathways to Decarbonization project.

Competitive resource acquisition

Our two most recent Annual Planning Outlooks have indicated Ontario will experience capacity and energy gaps starting in the mid-2020s coinciding with the expiration of some long-term generation contracts, as well as the refurbishment and retirement of several nuclear units. To help address these shortfalls, the IESO moved forward with a Resource Adequacy Framework that sets out a long-term competitive strategy to acquire resources in a flexible and cost-effective way.

The framework establishes a clear cycle of annual planning activities, which together will enable the IESO to meet system needs on a near-, medium- and long-term basis after careful consideration of the risks to all parties, including suppliers and ratepayers.

In July 2021, we published the first Annual Acquisition Report (AAR), which mapped out the actions that were required to maintain reliability and address supply needs identified in the 2020 Annual Planning Outlook (APO) and other planning reports.

The 2021 AAR established targets for the December 2021 Capacity Auction and provided forward guidance for the IESO to secure short-term commitments that address needs that fluctuate from year to year, without locking into longer term commitments. In direct response to stakeholder feedback, the 2021 auction helped provide some certainty to the market by establishing minimum thresholds.

The 2021 AAR also confirmed the need to reacquire existing resources and secure new ones down the road. Competition will be key for both processes. Development of the principles, processes and documentation for the Medium-Term RFP and the Long-Term RFQ/RFP were advanced with stakeholders during 2021. Going forward, publication of the APO in future years will mark the start of an annual process that allows us to update our plans and requirements to align with changing system needs.

In parallel, work also continued on the Enabling Resources Program. A multi-year initiative, this program considers the sequencing, timing and scope of activities to be undertaken by the IESO to enable existing electricity resources to provide electricity system services in the renewed Ontario wholesale market that they cannot, or cannot fully, currently provide. In December 2021, we unveiled a proposed five-year work plan that describes integration work related to energy storage, hybrid generation-storage projects and distributed energy resources (DERs), including aggregations of DERs and flexible loads.

Enabling these resources will be essential to ensure we have robust supply options moving forward. The work plan reflects the IESO's stated focus on establishing pragmatic models that enable resources to provide grid services with manageable implementation cost and complexity. It also provides stakeholders with greater certainty regarding timing (which will facilitate investment planning) and will also facilitate greater competition in future acquisitions, enabling the IESO to meet Ontario's needs in the most cost-effective manner.

Over the past 12 months, we advanced our review of certain unsolicited proposals and also initiated discussions about design considerations for a potential small hydro program to ensure system and ratepayer benefits.

Market redesign fundamentals

The Market Renewal Program (MRP) is a transformative project that will deliver more efficient wholesale markets. Once fully implemented, the project will result in market enhancements that correct existing inefficiencies and encourage greater competition that will deliver \$800 million in net benefits in the first 10 years alone.

In 2021, efforts focused on MRP implementation activities. Building on the work already underway, we continued to actively engage with IESO customers and stakeholder communities to ensure that market participants can review proposed rules, make recommendations and strategize on ways to adapt effectively to the changes that are taking place in the electricity market.

One example of that engagement was the formation of the MRP Technical Advisory Group in 2021. The group enlisted volunteers from across the sector to provide advice, guidance and support for testing activities and training material related to the renewed energy market. By proactively working with affected stakeholders from the beginning, we are better able to support customers through these changes while improving the testing and training process.

Compliance and enforcement priorities

Robust and competitive electricity markets require a strong compliance and enforcement framework. To further the IESO's objectives of enhancing system reliability and market efficiency, the Market Assessment and Compliance Division (MACD) undertook a range of activities in 2021.

MACD fulfills its primary mandate of fostering compliance with the market rules in different ways. For example, it engages in what are known as "compliance-enabling activities" that provide market participants with the information they need to help them comply with market rules and reliability standards. In 2021, MACD issued two Statements of Approach on specific issues and completed 11 rule interpretation and directional enforcement guidance responses as part of its Compliance and Enforcement Guidance program.

MACD also conducted audits and required self-certifications to ensure compliance with reliability standards that are designed to promote the safety and reliability of the grid, including those that aim to protect against cyberattacks.

As to enforcement, MACD also carries out the core functions of compliance monitoring and analysis, investigating possible breaches, determining sanctions and recovering overpayments. In 2021, these activities led to issuing financial penalties, or recovering unwarranted payments, totaling approximately \$45 million.

The IESO is also required to comply with rules and standards set by other regulatory bodies, including the North American Electric Reliability Corporation (NERC). In 2021, we completed a comprehensive audit of compliance with NERC standards, which define the minimum requirements for planning and operating the bulk power system, including protection of critical infrastructure. The auditors praised the IESO for adhering to industry best practices and identified some minor areas for improvement that we can strive toward.

Protecting the grid

A reliable power system is the cornerstone of modern society. It is the foundation on which Ontario's economy is built. Given the interconnectedness of the North American grid, the electricity sector has a shared responsibility to protect physical and cyber assets. The IESO plays a critical role by coordinating and promoting cybersecurity situational awareness and information sharing. It is an area that requires continuous support, investment and oversight, especially at a time when cyber attacks are on the rise.

Having access to actionable threat intelligence information is more critical than ever before. In 2018, the IESO became the first system operator in North America accountable for providing cybersecurity-related services to the broader electricity sector. We launched the Lighthouse program to provide a view into cyber threats and incidents that can impact our power grid, helping members prepare their cyber defences.

Participation in Lighthouse by local distributors and transmitters continues to grow and integration efforts are ongoing. At the end of 2021, the Lighthouse program covered 96 per cent of the Ontario grid. With each new member, our situational awareness improves and our interconnected grid becomes stronger and more resilient.

Supporting our employees

Having a committed, productive and skilled workforce has always been a priority for the IESO. Employees are absolutely integral to the IESO achieving its organizational objectives and ensuring Ontarians enjoy a reliable, sustainable and affordable electricity system.

The IESO's values have served as guidance and direction through the challenges and uncertainty of the pandemic. Employee feedback tells us these values continue to resonate. By living our values through the way we operate and work with each other, we will continue to advance equity, diversity and inclusion, encourage openness to change, and ultimately provide a positive employee experience.

Building on some of the processes implemented in 2020 when the pandemic first emerged, we evolved our work model in 2021. Most employees continued to work from home until mid-November, when we initiated a hybrid work model pilot. The design of this work model reflected input from employees, leaders and industry colleagues, providing for flexible work arrangements that meet the professional and personal needs of our employees. The pilot was paused due to the spread of the Omicron variant, but will resume when it is safe to do so.

In recognition of the unique challenges posed by the pandemic, we also expanded our holistic health, safety and wellness programming in 2021. It now includes a number of programs and resources, including a web-based e-learning platform, a leadership program on supporting mental wellness in the workplace, as well as counselling and learning sessions on resilience, mindfulness and stress management.

Results from the most recent employee engagement survey showed employees continue to feel well supported by the IESO through the pandemic.

Promoting Equity, Diversity and Inclusion

Building on work that began in 2020, we continued to focus on making the IESO a more inclusive workplace in 2021. For example, our President and CEO signed Electricity Human Resources Canada's Leadership Accord on Equity, Diversity and Inclusion; we delivered EDI training at all levels of the organization (including the executive leadership team); and we reviewed our performance and talent practices.

Our efforts to create a safe, engaging and rewarding employee experience are delivering results. In mid-December 2021, the IESO was named one of Greater Toronto's top employers for 2022. We were recognized in a number of areas, including our pandemic response, access to mental health care and in-house training opportunities, among others.

Supporting learning and leadership – at all levels – is an important aspect of the IESO's EDI strategy. In 2021, all IESO vice-presidents participated in coaching and learning programs that enhanced awareness of the experiences of marginalized groups and resulted in development actions that will advance EDI at the IESO.

Inclusiveness training was offered to all IESO employees and webinars/workshops were developed to address some core themes around inclusion, bias and equity. We also assessed our talent management practices and will be implementing changes in 2022 to ensure candidates and employees are evaluated fairly, consistently and objectively.

Building the capability for tomorrow

While many, if not most, of the IESO's employees arrive with advanced degrees, on-the-job learning is critical to employee development and performance. In order to fully deliver on our mandate, the IESO needs to have an employee base with the right skills, aptitudes and competencies not just for today's work, but for tomorrow's as well.

For this reason, the IESO made strategic investments in learning and development for 2021 with a view to aligning programs with corporate priorities – and employee interests. For example, we sponsored Learning Week 2021, which offered 10 one-hour learning sessions to all employees on topics such as leadership, electricity sector trends, cybersecurity and career development. We also expanded our approach to include more online content, enlist internal subject matter experts to support their colleagues' development, and establish virtual learning communities.

Driving business transformation

Given the scope of the IESO's mandate, and the importance of electricity to Ontario's economy, we routinely reevaluate the way we do business to ensure we have the right structure, capabilities and tools to deliver. This work affects every aspect of the organization and requires us to carefully consider and explore new ways of doing business.

Value creation through data

Good decisions require good data. Given our central role in managing the power system and the scope of our IT tools and systems, the IESO has access to a wealth of operational electricity data stretching back to the opening of Ontario's electricity market in 2002. When fully utilized, this data can provide unique insights into the complex inner-workings of electricity production, usage, planning and forecasting and much more.

Furthermore, the profound transformation of the energy sector – fueled by the proliferation of distributed energy resources, accelerated electrification and increased storage solutions – demands a new approach to data and analytics. This approach is anchored in advanced technologies capable of capturing vast quantities of operational data at a very granular level, processing it at unprecedented speeds and producing highly intelligent insights and information.

In 2019, the IESO embarked on a rigorous effort to evolve our data and analytics maturity level and capabilities. By developing a strategy designed to treat organizational data as a valuable business asset, we intend to leverage this data to identify additional market efficiencies, support reliable grid operations and improve our risk management practices.

With the first years focused on building a strong foundation for data governance, tools and practices, the Data Excellence Program continues to make good progress in enabling better use and access to organizational data and creating tangible value for the business, which in turn delivers value to the electricity sector and to ratepayers alike. Highlights in 2021 included the installation of an enterprise-wide data catalogue; the launch of a data warehouse modernization project; and the creation of a very promising Machine Learning DataLab for advanced analytics.

Separately, the Smart Metering Entity (SME) of the IESO is also proceeding with efforts to extract the full value of Ontario's smart meter data. This data has already provided valuable insights in a number of areas, including electricity demand forecasting to better understand the impacts of the pandemic on residential use. Going forward, it may also be leveraged for energy efficiency program design, distribution rate design and pricing models, and transmission and distribution system planning, among other applications.

After consulting with stakeholders, the SME submitted a new application to the Ontario Energy Board in October 2021 to enable limited third-party access to the smart meter data for non-commercial purposes by other public sector entities, which will help create new value streams for the ratepayers of Ontario.

Investing in new tools

We continue to update and enhance the internal tools, systems and IT solutions required to operate the system and administer the market – not just today but into the future. From a reliability perspective, one of the most mission-critical capital projects underway in 2021 concerns the Energy Management System (EMS), a system of computer-aided tools used by operators of electric utility grids to monitor, control and optimize the performance of the generation and transmission systems.

This four-year project will extend the life of the current Supervisory Control and Data Acquisition (SCADA)/EMS solution, facilitate the further integration of energy storage resources, and support other initiatives – including the Market Renewal Program – that require new functionalities. Likewise, we kicked off the “Dynamic Limits in Real-Time” project in 2021. It represents a foundational shift in how voltage and transient stability limits are determined and used to operate the grid. By integrating real-time system data into operating models, this change will improve transmission system utilization.

Management Report

Management's Responsibility for Financial Reporting

The accompanying financial statements of the Independent Electricity System Operator are the responsibility of management and have been prepared in accordance with Canadian public sector accounting standards. The significant accounting policies followed by the Independent Electricity System Operator are described in the Summary of Significant Accounting Policies contained in Note 2 in the financial statements. The preparation of financial statements necessarily involves the use of estimates based on management's judgment, particularly when transactions affecting the current accounting period cannot be finalized with certainty until future periods. The financial statements have been prepared within reasonable limits of materiality and in light of information available up to March 4, 2022.

Management maintained a system of internal controls designed to provide reasonable assurance that the assets were safeguarded and that reliable information was available on a timely basis. The system included formal policies and procedures and an organizational structure that provided for the appropriate delegation of authority and segregation of responsibilities.

These financial statements have been examined by Grant Thornton LLP, a firm of independent external auditors appointed by the Board of Directors. The auditor's responsibility is to express an opinion on whether the financial statements are fairly presented in accordance with generally accepted accounting principles in Canada. The Independent Auditor's Report, which follows, outlines the scope of their examination and opinion.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR

On behalf of management,



Lesley Gallinger
President and Chief Executive Officer
Toronto, Ontario
March 4, 2022



Barbara Anderson
Chief Financial Officer and Vice-President,
Corporate Services
Toronto, Ontario
March 4, 2022

Independent Auditor's Report

To the Board of Directors of the Independent Electricity System Operator

Opinion

We have audited the financial statements of the Independent Electricity System Operator ("IESO"), which comprise the statement of financial position as at December 31, 2021, and the statements of operations and accumulated deficit, remeasurement gains and losses, change in net debt and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the IESO as at December 31, 2021, and its results of operations, remeasurement gains and losses, changes in its net debt, and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the IESO in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the IESO's ability to continue as a going concern, disclosing, as applicable, matters related to a going concern and using the going concern basis of accounting unless management either intends to liquidate the IESO or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the IESO's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the IESO's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the IESO's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the IESO to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

The logo for Grant Thornton LLP, featuring the company name in a stylized, cursive script.

Grant Thornton, LLP
A Canadian Member of Grant Thornton International Ltd
Chartered Professional Accountants
Licensed Public Accountants

Mississauga, Canada
March 4, 2022

Statement of Financial Position

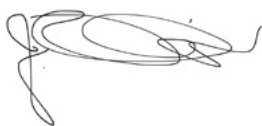
As at (in thousands of Canadian dollars)

December 31, 2021

December 31, 2020

	\$	\$
FINANCIAL ASSETS		
Cash	60,667	79,355
Accounts receivable (Note 3)	79,989	104,951
Long-term investments (Note 4)	71,972	55,570
TOTAL FINANCIAL ASSETS	212,628	239,876
LIABILITIES		
Accounts payable and accrued liabilities (Note 5)	89,789	116,103
Rebates due to market participants (Note 7)	13,671	2,459
Debt (Note 8)	120,000	120,000
Accrued pension liability (Note 9)	20,689	25,120
Accrued liability for employee future benefits other than pension (Note 9)	162,700	150,961
TOTAL LIABILITIES	406,849	414,643
NET DEBT	(194,221)	(174,767)
NON-FINANCIAL ASSETS		
Tangible capital assets (Note 10)	176,168	149,813
Prepaid expenses	10,005	8,695
TOTAL NON-FINANCIAL ASSETS	186,173	158,508
ACCUMULATED DEFICIT		
Accumulated deficit from operations	(25,825)	(31,076)
Accumulated remeasurement gains	17,777	14,817
ACCUMULATED DEFICIT (Note 6)	(8,048)	(16,259)
Commitments (Note 15)		
Contingencies (Note 16)		
See accompanying notes to financial statements		

On behalf of the Board:



Joe Oliver
Chair
Toronto, Canada



David Sinclair
Director
Toronto, Canada

Statement of Operations and Accumulated Deficit

For the year ended December 31 (in thousands of Canadian dollars)	2021	2021	2020
	Budget \$	Actual \$	Actual \$
IESO CORE OPERATIONS			
System fees	191,835	195,029	188,602
Other revenue (Note 11)	1,748	3,288	3,651
Interest and investment income	1,700	4,044	2,989
Core operation revenues	195,283	202,361	195,242
Core operation expenses (Note 12)	(195,283)	(191,679)	(189,714)
Core operations surplus	-	10,682	5,528
OTHER GOVERNMENT PROGRAMS			
Government transfer	-	(858)	888
Government transfer expenses (Note 12)	-	858	(888)
Government transfer surplus	-	-	-
SMART METERING ENTITY			
Smart metering charge net of rebates	34,458	21,881	32,790
Smart metering expenses (Note 12)	(31,473)	(27,312)	(25,997)
Smart metering entity (deficit)/surplus	2,985	(5,431)	6,793
MARKET SANCTIONS AND PAYMENT ADJUSTMENTS			
Market sanctions and payment adjustments	12,490	11,843	10,056
Customer education and market enforcement expenses (Note 12)	(12,490)	(11,843)	(10,439)
Market sanctions and payment adjustments deficit	-	-	(383)
SURPLUS	2,985	5,251	11,938
ACCUMULATED DEFICIT FROM OPERATIONS, BEGINNING OF PERIOD	(31,076)	(31,076)	(43,014)
ACCUMULATED DEFICIT FROM OPERATIONS, END OF PERIOD	(28,091)	(25,825)	(31,076)

See accompanying notes to financial statements

Statement of Remeasurement Gains and Losses

For the year ended December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
ACCUMULATED REMEASUREMENT GAINS, BEGINNING OF PERIOD	14,817	12,056
UNREALIZED GAINS/LOSSES ATTRIBUTABLE TO:		
Foreign exchange – other	560	567
Portfolio investments	2,967	2,756
AMOUNTS RECLASSIFIED TO THE STATEMENT OF OPERATIONS:		
Foreign exchange – other	(567)	(562)
NET REMEASUREMENT GAINS FOR THE PERIOD	2,960	2,761
ACCUMULATED REMEASUREMENT GAINS, END OF PERIOD	17,777	14,817
See accompanying notes to financial statements		

Statement of Change in Net Debt

For the year ended December 31 (in thousands of Canadian dollars)	2021	2021	2020
	Budget	Actual	Actual
	\$	\$	\$
SURPLUS	2,985	5,251	11,938
CHANGE IN NON-FINANCIAL ASSETS			
Acquisition of tangible capital assets	(78,185)	(50,284)	(56,292)
Amortization of tangible capital assets	23,373	23,929	23,046
Change in prepaid expenses	-	(1,310)	(383)
TOTAL CHANGE IN NON-FINANCIAL ASSETS	(54,812)	(27,665)	(33,629)
NET REMEASUREMENT GAINS FOR THE PERIOD	-	2,960	2,761
CHANGE IN NET DEBT	(51,827)	(19,454)	(18,930)
NET DEBT, BEGINNING OF PERIOD	(174,767)	(174,767)	(155,837)
NET DEBT, END OF PERIOD	(226,594)	(194,221)	(174,767)

See accompanying notes to financial statements

Statement of Cash Flows

For the year ended December 31 (in thousands of Canadian dollars)

	2021	2020
	\$	\$
OPERATING TRANSACTIONS		
Surplus	5,251	11,938
Changes in non-cash items:		
Amortization	23,929	23,046
Unrealized foreign exchange (losses)/gains for the period	(7)	5
Pension expense	(4,431)	(1,176)
Other employee future benefits expense	11,739	10,120
	31,230	31,995
Changes in non-cash balances related to operations:		
Change in accounts payable and accrued liabilities	(29,482)	(15,896)
Change in accounts receivable	24,962	37,631
Change in rebates due to market participants	11,212	2,459
Change in prepaid expenses	(1,310)	(383)
	5,382	23,811
Cash provided by operating transactions	41,863	67,744
CAPITAL TRANSACTIONS		
Acquisition of tangible capital assets	(50,284)	(56,292)
Change in accounts payable and accrued liabilities related to tangible capital assets	3,168	1,352
Cash applied to capital transactions	(47,116)	(54,940)
INVESTING TRANSACTIONS		
Purchase of long-term investments	(13,435)	(2,498)
Cash applied to investing transactions	(13,435)	(2,498)
(DECREASE) INCREASE IN CASH	(18,688)	10,306
CASH - BEGINNING OF PERIOD	79,355	69,049
CASH - END OF PERIOD	60,667	79,355

See accompanying notes to financial statements

Notes to Financial Statements

1. NATURE OF OPERATIONS

The Independent Electricity System Operator (IESO) is a not-for-profit, non-taxable corporation established pursuant to Part II of the *Electricity Act, 1998* (the Act). As set out in the Act, the IESO operates pursuant to a licence granted by the Ontario Energy Board (OEB).

The objects of the IESO are contained in the Act and associated Ontario regulations. The IESO ensures the reliability of the province's power system on behalf of all Ontarians, leveraging its expertise and purposeful engagement to advance energy policy that cost effectively achieves this goal. As part of its mandate, the IESO operates Ontario's electricity grid in real-time, governs electricity markets, prepares for the future to ensure electricity will be available when and where it is needed, and helps inform the decisions that will be critical to shaping the future of the sector.

The IESO operates the IESO-administered markets and the OEB has regulatory oversight of electricity matters in Ontario. In addition, in 2007 the IESO was designated the Smart Metering Entity (SME) by Ontario statute. In its role as the SME, the IESO maintains and operates the province's smart metering data repository, the central hub for processing, storing and protecting electricity consumption data used for consumer billing by local distribution companies.

In 2018, the IESO's licence was amended to require the organization to provide and promote centralized cybersecurity information services in conjunction with licenced transmitters and distributors. Under the amendment, these services include providing situational awareness of potential threats that may affect the electricity sector, and developing an information exchange mechanism for sharing cybersecurity best practices to improve sector understanding of associated risks and solutions.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

a) Basis of financial statement preparation

The accompanying financial statements have been prepared on a going-concern basis and in accordance with Canadian public sector accounting standards (PSAS) and reflect the following significant accounting policies.

These financial statements do not include the financial accounts and Government transfers for the IESO-administered markets as the IESO is an intermediary to facilitate the settlement of these transactions. A separate and distinct set of financial statements is prepared for the IESO-administered markets. The IESO-administered markets is as prescribed by the Act and associated Ontario regulations.

b) Revenue recognition

System fees earned by the IESO are based on rates approved by the OEB for each megawatt of electricity withdrawn from the IESO-controlled grid. System fees are recognized as revenue at the time the electricity is withdrawn.

The SME's charge is based on rates approved by the OEB for each installed smart meter in the province. Revenue is recognized by charging the OEB-approved rate per smart meter per month.

Other revenue represents amounts that accrue to the IESO relating to investment income on funds passing through market settlement accounts, program revenue, as well as application fees. Investment income is recognized monthly. Program revenue and application fees are recognized when service is provided.

Interest and investment income represents realized interest income and investment gains or losses on cash, cash equivalents, short-term investments and long-term investments.

Government transfers are recognized as revenue in the financial statements in the period in which the events giving rise to the transfer occur, providing the transfers are authorized, any eligibility criteria have been met and reasonable estimates of the amounts can be made.

Market sanctions represent funds received to offset payments disbursed related to penalties, damages, fines and payment adjustments. Such revenue is recognized when settlement disputes are resolved.

c) Financial instruments

The IESO records cash and cash equivalents, long-term investments and foreign currency exchange forward contracts at fair value. The cumulative change in fair value of these financial instruments is recorded in accumulated deficit as remeasurement gains and losses and is included in the value of the respective financial instrument shown in the statement of financial position and the statement of remeasurement gains and losses. Upon disposition of the financial instruments, the cumulative remeasurement gains and losses are reclassified to the statement of operations, and all other gains and losses associated with the disposition of the financial instrument are recorded in the statement of operations. Transaction costs are charged to operations as incurred.

Cash and cash equivalents comprise cash, term deposits and other short-term, highly rated investments with original maturity dates of less than 90 days.

The IESO records accounts receivable, accounts payable, rebates due to market participants and debt at amortized cost.

d) Tangible capital assets

Tangible capital assets are recorded at cost, which includes all amounts directly attributable to the acquisition, construction, development or betterment of the asset.

The estimated service lives of tangible capital assets are subject to periodic review. The effects of changes in the estimated lives are amortized on a prospective basis. The most recent review was completed in fiscal 2021.

An impairment loss on tangible capital assets is recognized when conditions indicate that the asset no longer contributes to the IESO's ability to provide services, or that the value of the future economic benefit associated with the tangible capital asset is less than its net book value.

Assets under construction generally relates to the costs of physical facilities, information technology hardware and software, and includes costs paid to vendors, internal and external labour, consultants and interest related to funds borrowed to finance the project. Costs relating to assets under construction are not available for use and therefore are not subject to amortization. The IESO capitalizes applicable interest as part of the cost of tangible capital assets.

The capital cost of tangible capital assets are amortized on a straight-line basis over their estimated service lives.

The estimated service lives, in years, from the date the assets were acquired are:

Class	Estimated Average Service Life 2021	Estimated Average Service Life 2020
Facilities and leasehold improvements	5 to 50	5 to 50
Market systems and applications	4 to 12	4 to 12
Information technology hardware and other assets	4 to 10	4 to 10
Meter data management / repository	4 to 10	4 to 10

Gains and losses on sales or premature retirements of tangible capital assets are charged to operations.

e) Pension, other post-employment benefits and compensated absences

The IESO's post-employment benefit programs include pension, group life insurance, health care, long-term disability and workers' compensation benefits.

The IESO accrues obligations under pension and other post-employment benefit plans and the related costs, net of plan assets. Pension and other post-employment benefit expenses and obligations are determined annually by independent actuaries using the projected benefit method and management's best estimate of expected return on plan assets, salary escalation, retirement ages of employees, mortality and expected health-care costs. The discount rates utilized to value liabilities as at the measurement date of September 30 are based on the expected rate of return on plan assets for the registered pension plan and the IESO's estimated cost of borrowing for the supplemental employee retirement and other post-employment benefit plans.

The expected return on plan assets is based on management's long-term best estimate using a market-related value of registered pension plan assets. The market-related value of plan assets is determined using the average value of assets over three years as at the measurement date of September 30.

Pension and other post-employment benefit expenses are recorded during the year in which employees render services. Pension and other post-employment benefit expenses consist of current service costs, interest expense on liabilities, expected return on plan assets and the cost of plan amendments in the period. Actuarial gains (losses) arise from, among other things, the difference between the actual rate of return on plan assets for a period and the expected long-term rate of return on plan assets for that period or from changes in actuarial assumptions used to determine the accrued benefit obligations.

Actuarial gains (losses) are amortized over the expected average remaining service life of the employees covered by the plan. The expected average remaining service life of employees covered by the pension plans is 14.5 years (2020 – 14.5 years) and other post-employment benefit plan is 17.2 years (2020 – 17.2 years).

The IESO sick pay benefits accumulate but do not vest. The IESO accrues sick pay benefits based on the expectation of future utilization and records the accrual within accounts payable and accrued liabilities.

f) Foreign currency exchange

Transactions denominated in foreign currencies are converted into Canadian dollars at the rate of exchange prevailing on the date of the transaction. Items on the statement of financial position denominated in foreign currency are converted to Canadian dollars at the rate of exchange as of the date of the financial statements. The cumulative unrealized foreign currency exchange gains and losses of items continuing to be recognized on the statement of financial position are recorded in the statement of remeasurement gains and losses. Upon settlement of the item denominated in a foreign currency, the cumulative remeasurement gains and losses are reclassified to the statement of operations, and all other gains and losses associated with the disposition of the financial instrument are recorded in the statement of operations.

g) Use of estimates

The preparation of the financial statements in conformity with Canadian public sector accounting standards requires management to make estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosure of contingent assets and liabilities as at the date of the financial statements. The IESO's accounts that involve a greater degree of uncertainty include the carrying values of tangible capital assets, accrual for contract cancellation costs (Note 13 (e)), accrued pension liability and accrual for employee future benefits other than pensions. Actual results could differ from those estimates.

3. ACCOUNTS RECEIVABLE

Accounts receivable includes an amount of \$25,500 thousand (2020 - \$25,222 thousand) due from the IESO-administered markets which are managed by the IESO.

4. LONG-TERM INVESTMENTS

Long-term investments in a balanced portfolio of pooled funds are valued by the pooled funds manager based on published price quotations and amount to \$71,140 thousand (2020 - \$54,834 thousand). As at December 31, the market value allocation of these long-term investments was 61.9% equity securities and 38.1% debt securities (2020 - 61.6% and 38.4%, respectively). In addition to the balanced portfolio of pooled funds, the IESO has a long-term deposit with Canada Revenue Agency in the amount of \$832 thousand (2020 - \$736 thousand) pertaining to the Retirement Compensation Arrangements Trust (Note 8).

As at December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
Opening balance - pooled funds	54,834	49,707
Purchase of investments	13,339	2,371
Change in fair value	2,967	2,756
Sub-total - Balanced portfolio of pooled funds' closing balance	71,140	54,834
Canada Revenue Agency's Retirement Compensation Arrangements amount	832	736
Total	71,972	55,570

Fair value measurements of long-term investments are categorized using a fair value hierarchy that reflects the significance of inputs used in determining the fair values.

- Level 1: unadjusted quoted prices in active markets for identical assets or liabilities;
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly; and
- Level 3: inputs for assets and liabilities that are not based on observable market data.

There were no transfers from Level 1, Level 2, or Level 3 during fiscal 2021 or during fiscal 2020.

The following tables illustrate the classification of the long-term investments within the fair value hierarchy as at year-end:

Fair value as at December 31, 2021

(in thousands of Canadian dollars)	Level 1	Level 2	Level 3	Total
Cash Deposits - Canada Revenue Agency	832	-	-	832
TD Emerald Pooled Funds	-	71,140	-	71,140
	832	71,140	-	71,972

Fair value as at December 31, 2020

(in thousands of Canadian dollars)	Level 1	Level 2	Level 3	Total
Cash Deposits - Canada Revenue Agency	736	-	-	736
TD Emerald Pooled Funds	-	54,834	-	54,834
	736	54,834	-	55,570

5. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

As at December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
Relating to operations	81,703	111,185
Relating to tangible capital assets	8,086	4,918
Closing balance	89,789	116,103

6. ACCUMULATED DEFICIT

The IESO's regulatory deferral account balance is subject to OEB orders. During 2021, the IESO received a decision and order by the OEB to maintain the regulatory deferral account at a maximum of \$10,000 thousand (2020 - \$10,000 thousand).

As at December 31, the components of the accumulated deficit were as follows:

Total - Accumulated Deficit

As at December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
Regulatory deferral account (a)	8,674	1,250
Smart Metering Entity (b)	12,699	18,130
Accumulated market sanctions and payment adjustments (c)	-	-
Remeasurement gains (d)	13,633	10,673
PSAS transition items (e)	(43,054)	(46,312)
Accumulated deficit - end of year	(8,048)	(16,259)

a) Regulatory Deferral Account - Accumulated Surplus

As at December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
Accumulated deficit - beginning of year	1,250	(1,020)
Core operation revenues	202,361	195,242
Core operation expenses	(191,679)	(189,714)
Recovery of annual PSAS transition items*	(3,258)	(3,258)
Accumulated deficit - end of year	8,674	1,250

b) Smart Metering Entity Account – Accumulated Surplus

As at December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
Accumulated surplus – beginning of year	18,130	11,337
Smart metering charge	21,881	32,790
Smart metering expenses	(27,312)	(25,997)
Accumulated surplus – end of year	12,699	18,130

c) Market Sanctions and Payment Adjustments – Accumulated Surplus

As at December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
Accumulated surplus – beginning of year	-	383
Market sanctions and payment adjustments	11,843	10,056
Customer education and market enforcement expenses	(11,843)	(10,439)
Accumulated surplus – end of year	-	-

d) Remeasurement Gains

As at December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
Accumulated remeasurement gains – beginning of year	10,673	7,912
Net remeasurement gains	2,960	2,761
Accumulated remeasurement gains – end of year	13,633	10,673

e) PSAS Transition Item – Accumulated Deficit

As at December 31 (in thousands of Canadian dollars)	2021	2020
	\$	\$
Accumulated deficit – beginning of year	(46,312)	(49,570)
Recovery of annual PSAS transition items*	3,258	3,258
Accumulated deficit – end of year	(43,054)	(46,312)

*Effective January 1, 2011, the IESO adopted Canadian public sector accounting standards (PSAS) with a transition date of January 1, 2010. The adoption of PSAS was accounted for by retroactive application with restatement of prior periods subject to the requirements in Section PS 2125, First-time Adoption by Government Organizations. The corresponding change to pension and other-post employment benefits resulted in previously unrecognized actuarial losses and past service costs of \$98,832 thousand at the date of transition being charged to the PSAS Transition Item's accumulated deficit. Each year, the IESO recovers a portion of the PSAS Transition Item's deficit through the IESO's annual system fees revenue. The annual amount recovered is transferred from the Regulatory Deferral Account to the PSAS Transition Item accumulated deficit each year.

7. REBATES DUE TO MARKET PARTICIPANTS

In 2021, the IESO recognized \$13,671 thousand (2020 - \$2,459 thousand) in rebates due to market participants regarding the SME in accordance with an OEB order. The OEB has ordered that the SME can accumulate up to a maximum operating reserve balance including certain OEB-approved adjustments and timelines. The OEB will regularly order the SME to rebate to market participants any amount that exceeds the maximum operating reserve balance. As at December 31, 2021, the rebates due to market participants were \$13,671 thousand (2020 - \$2,459 thousand).

8. DEBT

Note payable to Ontario Electricity Financial Corporation (OEFC)

In June 2020, the IESO entered into a note payable with the OEFC. The note payable is unsecured, bears interest at a fixed rate of 1.132% per annum and is repayable in full on June 30, 2023. Interest accrues daily and is payable in arrears semi-annually in June and December of each year. As at December 31, 2021, the note payable to the OEFC was \$120,000 thousand (2020 - \$120,000 thousand). For the year ended December 31, 2021, the interest expense on the note payable was \$1,358 thousand (2020 - \$1,739 thousand).

Credit facility with OEFC

The IESO has an unsecured credit facility agreement with the OEFC, which will make available to the IESO an amount up to \$160,000 thousand. Advances and monthly rollover amounts are payable at a variable interest rate equal to the Province of Ontario's cost of borrowing for a 30-day term plus 0.50% per annum. The credit facility expires June 30, 2023. As at December 31, 2021, the credit facility payable to the OEFC was \$nil (2020 - \$nil).

For the year ended December 31, 2021, the interest expense on the credit facility was \$nil (2020 - \$nil).

Retirement Compensation Arrangements Trust

In July 2013, the IESO established a Retirement Compensation Arrangements Trust to provide security for the IESO's obligations under the terms of the supplemental employee retirement plan for its employees. As at December 31, 2021, the IESO has provided the Retirement Compensation Arrangements' trustee with a bank letter of credit of \$42,357 thousand (2020 - \$42,390 thousand) the trustee can draw upon if the IESO is in default under the terms of this plan.

Workplace Safety and Insurance Board - Ontario

During 2021, the IESO provided the Workplace Safety and Insurance Board with a bank letter of credit of \$20 thousand (2020 - \$20 thousand) for the IESO's obligation under the *Workplace Safety and Insurance Act*.

9. POST-EMPLOYMENT BENEFIT PLANS

The IESO provides pensions and other employee post-employment benefits, comprising group life insurance, long-term disability and group medical and dental plans, for the benefit of current and retired employees.

Pension plans

The IESO provides a contributory defined benefit, indexed, registered pension plan. In addition, the IESO provides certain non-registered defined benefit pensions through an unfunded, indexed, supplemental employee retirement plan.

Other employee future benefits

The group life insurance, long-term disability and group medical and dental benefits are provided through unfunded, non-registered defined benefit plans.

Summary of accrued benefit obligations and plan assets

(in thousands of Canadian dollars)	2021 Pension Benefits	2020 Pension Benefits	2021 Other Benefits	2020 Other Benefits
	\$	\$	\$	\$
Accrued benefit obligation	(671,309)	(650,289)	(147,802)	(165,698)
Fair value of plan assets	720,786	663,464	-	-
Funded status as of measurement date	49,477	13,175	(147,802)	(165,698)
Employer contribution/other benefit payments after measurement date	3,603	346	631	614
Deferred asset (gain)	(22,361)	(7,689)	-	-
Unamortized actuarial (gain) loss subject to amortization	(51,408)	(30,952)	(15,529)	14,123
Accrued liability recognized in the statement of financial position	(20,689)	(25,120)	(162,700)	(150,961)
Actuarial value of plan assets (as at September 30)	698,425	655,774	-	-

Registered pension plan assets

The one-year actual return on the registered pension plan's assets as at September 30, 2021 was 11.3% per annum (2020 – 6.2% per annum).

As at the measurement date of September 30, the proportion of the fair value of registered pension plan assets held in each asset class was as follows:

	2021	2020
Canadian equity securities	10.0%	15.4%
Foreign equity securities	41.1%	35.7%
Canadian debt securities	29.4%	30.2%
Global infrastructure	9.4%	9.3%
Canadian real estate	9.0%	8.9%
Cash equivalents	1.1%	0.3%
Forward foreign exchange contracts	0.0%	0.2%
	100.0%	100.0%

Principal assumptions used to calculate benefit obligations at the end of the year are determined at that time and are as follows:

	2021 Registered Pension Benefits	2020 Registered Pension Benefits	2021 Supplemental Pension Benefits	2020 Supplemental Pension Benefits	2021 Other Benefits	2020 Other Benefits
Discount rate at the end of the period	5.50%	5.50%	3.40%	2.60%	3.40%	2.60%
Rate of compensation increase	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
Rate of indexing	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

The assumed prescription drug inflation was 6.00% in 2021, grading down to an ultimate rate of 4.00% per year in 2031. Dental costs are assumed to increase by 4.00% per year.

Benefit costs and plan contributions for pension and other plans are summarized as follows:

(in thousands of Canadian dollars)	2021 Pension Benefits	2020 Pension Benefits	2021 Other Benefits	2020 Other Benefits
	\$	\$	\$	\$
Current service cost (employer)	14,177	13,942	8,931	7,629
Interest cost	34,829	33,311	4,503	4,396
Expected return on plan assets	(35,763)	(33,612)	-	-
Amortization of net actuarial (gain) loss	(2,135)	(1,665)	821	223
Benefit cost	11,108	11,976	14,255	12,248

(in thousands of Canadian dollars) (as at September 30)	2021 Pension Benefits	2020 Pension Benefits	2021 Other Benefits	2020 Other Benefits
	\$	\$	\$	\$
Employer contribution/other benefit payments	12,282	15,390	2,499	2,158
Plan participants' contributions	9,278	8,793	-	-
Benefits paid	32,652	30,181	2,499	2,158

The most recent actuarial valuation of the IESO registered pension plan for regulatory funding purposes was completed as at January 1, 2019.

Principal assumptions used to calculate benefit costs for the year are determined at the beginning of the period and are as follows:

	2021 Registered Pension Benefits	2020 Registered Pension Benefits	2021 Supplemental Pension Benefits	2020 Supplemental Pension Benefits	2021 Other Benefits	2020 Other Benefits
Discount rate at the beginning of the period	5.50%	5.50%	2.60%	2.90%	2.60%	2.90%
Rate of compensation increase	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
Rate of indexing	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

10. TANGIBLE CAPITAL ASSETS

Net tangible capital assets consist of the following:

Cost of Tangible Capital Assets

(in thousands of Canadian dollars)	As at December 31, 2020	Additions	Disposals	As at December 31, 2021
	\$	\$	\$	\$
Facilities and leasehold improvements	56,424	1,309	(3,232)	54,501
Market systems and applications	346,992	9,315	(34,763)	321,544
Information technology hardware and other assets	83,623	2,515	(41,199)	44,939
Meter data management/repository	59,572	10	(37,847)	21,735
Total cost	546,611	13,149	(117,041)	442,719

Accumulated Amortization

(in thousands of Canadian dollars)	As at December 31, 2020	Amortization Expense	Disposals	As at December 31, 2021
	\$	\$	\$	\$
Facilities and leasehold improvements	(29,953)	(1,541)	3,232	(28,262)
Market systems and applications	(316,247)	(12,017)	34,763	(293,501)
Information technology hardware and other assets	(69,010)	(4,940)	41,199	(32,751)
Meter data management/repository	(44,798)	(5,431)	37,847	(12,382)
Total accumulated amortization	(460,008)	(23,929)	117,041	(366,896)

Net Book Value

(in thousands of Canadian dollars)	As at December 31, 2020	As at December 31, 2021
	\$	\$
Facilities and leasehold improvements	26,471	26,239
Market systems and applications	30,745	28,043
Information technology hardware and other assets	14,613	12,188
Meter data management/repository	14,774	9,353
Total net book value	86,603	75,823
Assets under construction	63,210	100,345
Net tangible capital assets	149,813	176,168

In 2021, there were no adjustments to management's estimates of remaining asset service lives. Interest capitalized to assets under construction during 2021 was \$895 thousand (2020 - \$668 thousand).

11. OTHER REVENUE

In its administration of the IESO-administered markets, the IESO directs the investment of market funds in investments throughout the IESO-administered markets settlement cycle. The IESO is entitled to receive the investment income and investment gains, net of investment losses earned on funds passing through the IESO-administered markets settlement accounts. The IESO is not entitled to the principal on IESO-administered markets investments.

The IESO recognized investment income earned in the settlement accounts of \$1,792 thousand in 2021 (2020 - \$2,938 thousand).

The IESO also recognized application fees of \$14 thousand in 2021 (2020 - \$23 thousand) and program revenue of \$1,482 thousand (2020 - \$690 thousand).

12. EXPENSES BY OBJECT

Expenses by object for 2021 are comprised of the following:

(in thousands of Canadian dollars)	Core Operations 2021	Other Government Programs 2021	Smart Metering Entity 2021	Market Sanctions & Payment Adjustments 2021	Total 2021
	\$	\$	\$	\$	\$
Compensation and benefits	128,702	288	3,998	7,605	140,593
Professional and consulting	17,622	(111)	13,095	1,879	32,485
Operating and administration	34,508	118	4,788	2,359	41,773
Amortization	18,498	-	5,431	-	23,929
Interest	603	-	-	-	603
Foreign exchange gain	30	-	-	-	30
Contract cancellation costs (Note 13 (e))	-	(1,153)	-	-	(1,153)
Less: Recoveries	(8,284)	-	-	-	(8,284)
Total Expenses	191,679	(858)	27,312	11,843	229,976

Expenses by object for 2020 are comprised of the following:

(in thousands of Canadian dollars)	Core Operations 2020	Other Government Programs 2020	Smart Metering Entity 2020	Market Sanctions & Payment Adjustments 2020	Total 2020
	\$	\$	\$	\$	\$
Compensation and benefits	126,768	340	3,777	6,655	137,540
Professional and consulting	13,099	715	12,992	1,697	28,503
Operating and administration	34,144	62	5,829	2,087	42,122
Amortization	19,647	-	3,399	-	23,046
Interest	1,216	-	-	-	1,216
Foreign exchange gain	110	-	-	-	110
Contract cancellation costs (Note 13 (e))	-	(229)	-	-	(229)
Less: Recoveries	(5,270)	-	-	-	(5,270)
Total Expenses	189,714	888	25,997	10,439	227,038

13. RELATED PARTY TRANSACTIONS

The Province of Ontario controls the IESO by virtue of its ability to appoint the IESO's Board of Directors.

The OEFC, OEB, Hydro One, Ontario Power Generation (OPG), the Ministry of Energy, and the Ministry of the Environment, Conservation and Parks (MECP) are related parties of the IESO through the common control of the Province of Ontario. Transactions between related parties and the IESO are outlined below.

All related party transactions were measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

- a) The IESO holds a note payable and an unsecured credit facility agreement with the OEFC (Note 8). Interest payments made by the IESO in 2021 for the note payable were \$1,358 thousand (2020 - \$1,739 thousand) and for the credit facility were \$nil (2020 - \$nil). As of December 31, 2021, the IESO had an accrued interest payable balance with the OEFC of \$nil (2020 - \$nil).
- b) Under the *Ontario Energy Board Act, 1998*, the IESO incurs registration and license fees. The total of the transactions with the OEB was \$1,744 thousand in 2021 (2020 - \$1,803 thousand). As of December 31, 2021, the IESO had a receivable balance with the OEB of \$93 thousand (2020 - \$nil).
- c) The IESO performed connection and bulk electric system impact assessments for Hydro One in 2021, and invoiced Hydro One \$509 thousand (2020 - \$560 thousand). The IESO procures short circuit studies and protection impact assessments as part of connection assessments, approvals and meter services on IESO-owned interconnected revenue meters from Hydro One. In 2021, the IESO incurred costs of \$99 thousand (2020 - \$128 thousand) for these services and as of December 31, 2021, had a net receivable balance with Hydro One of \$44 thousand (2020 - \$12 thousand net payable).
- d) The IESO performs connection assessment and approvals for OPG, delivers telecommunication services to market participants to connect to the real-time market systems and provides market-related training courses. In 2021, OPG was invoiced \$172 thousand (2020 - \$87 thousand) and as of December 31, 2021, the IESO had a receivable balance with OPG of \$44 thousand (2020 - \$nil).
- e) In 2018, under the directive from the Ministry of Energy, the IESO exercised its termination rights under certain renewable energy contracts that had not yet reached an advanced stage in their development. The IESO and the Minister of Energy entered into agreements in which the Minister of Energy will compensate for the related costs to support the termination of these contracts. For 2021, under these agreements, the IESO re-estimated the accrued amount from the Minister of Energy by \$465 thousand (2020 - accrued \$874 thousand) and as of December 31, 2021 the IESO had a net receivable balance with the Minister of Energy of \$50,644 thousand (2020 - \$77,018 thousand).

14. FINANCIAL RISK MANAGEMENT

The IESO is exposed to financial risks in the normal course of its business operations, including market risks resulting from volatilities in equity, debt and foreign currency exchange markets, as well as credit risk and liquidity risk. The nature of the financial risks and the IESO's strategy for managing these risks has not changed significantly from the prior year.

a) Market Risk

Market risk refers to the risk that the fair value or future cash flows of a financial instrument will fluctuate to cause changes in market prices. The IESO is primarily exposed to three types of market risk: currency risk, interest rate risk and equity risk. The IESO monitors its exposure to market risk fluctuations and may use financial instruments to manage these risks as it considers appropriate. The IESO does not use derivative instruments for trading or speculative purposes.

i) Currency Risk

The IESO conducts certain transactions in U.S. dollars, primarily related to vendors' payments, and maintains a U.S. dollar-denominated bank account. From time to time, the IESO may utilize forward purchase contracts to purchase U.S. dollars for delivery at a specified date in the future at a fixed exchange rate. In addition, the IESO utilizes U.S. dollar spot rate purchases in order to satisfy any current accounts. As at December 31, 2021 (2020 - \$nil), the IESO did not have any outstanding forward purchase contracts.

ii) Interest Rate Risk

The IESO is exposed to movements or changes in interest rates primarily through its short-term variable rate credit facility, cash equivalents' securities and long-term investments. Long-term investments include investments in a pooled Canadian bond fund. The potential impact to the securities' value had the prevailing interest rates changed by 25 basis points, assuming a parallel shift in the yield curve with all other variables held constant, is estimated at \$1,138 thousand as at December 31, 2021 (2020 - \$899 thousand).

iii) Equity Risk

The IESO is exposed to changes in equity prices through its long-term investments. Long-term investments include investments in pooled equity funds. A 30% change in the valuation of equities as at December 31, 2021, would have resulted in a change for the year of approximately \$13,212 thousand (2020 - \$10,139 thousand). The fair values of all financial instruments measured at fair value are derived from quoted prices (unadjusted) in active markets for identical assets.

b) Credit Risk

Credit risk refers to the risk that one party to a financial instrument may cause a financial loss for the other party by failing to meet its obligations under the terms of the financial instrument. The IESO is exposed directly to credit risk related to cash equivalents' securities and accounts receivable, and indirectly through its exposure to the long-term investments in a Canadian bond pooled fund. The IESO manages credit risk associated with cash equivalents' securities through an approved management policy that limits investments to primarily investment-grade investments with counterparty-specific limits. The accounts receivable balance as at December 31, 2021 included no material items past due and substantially all of the balance is expected to be collected within 60 days from December 31, 2021. The long-term Canadian bond pooled fund is comprised of primarily investment-grade securities.

c) Liquidity Risk

Liquidity risk refers to the risk that the IESO will encounter financial difficulty in meeting obligations associated with its financial liabilities when due. The IESO manages liquidity risk by forecasting cash flows to identify cash flows and financing requirements. Cash flows from operations, short-term investments, long-term investments and maintaining appropriate credit facilities help to reduce liquidity risk. The IESO's long-term investments are normally able to be redeemed within two business days; however, the investment manager of the pooled funds has the authority to require a redemption in-kind rather than cash and has the ability to suspend redemptions if deemed necessary.

The maturities for accounts payable and accrued liabilities generally range between 30 days to 365 days, and the maturities of other financial liabilities are provided in the notes to financial statements related to these liabilities.

15. COMMITMENTS**Operating commitments**

The obligations of the IESO with respect to non-cancellable operating leases over the next five years and thereafter are as follows:

As at December 31 (in thousands of Canadian dollars)

	\$
2022	6,962
2023	6,937
2024	6,894
2025	5,884
2026 and thereafter	2,012
Total	28,689

16. CONTINGENCIES

The IESO is subject to various claims, legal actions and investigations that arise in the normal course of business. While the final outcome of such matters cannot be predicted with certainty, management believes that the resolution of such claims, actions and investigations will not have a material impact on the IESO's financial position or results of operations.

The IESO may be liable under additional terminated renewable energy contracts to a maximum of \$2,564 thousand, however, the likelihood or amount of any liability under these contracts cannot be reasonably determined and therefore no liability has been accrued in these financial statements.

17. COMPARATIVE FIGURES

Certain comparative figures have been reclassified to conform with the financial statement presentation adopted in 2021.

Executive Compensation at the IESO

Program Objectives

The IESO compensation program for executives was designed to attract, retain and motivate the calibre of executives required to support the achievement of the IESO's statutory mandate, business objectives and corporate vision. Accordingly, the compensation philosophy and programs were built on the following objectives:

- To focus executives on meeting the IESO's business objectives;
- To attract and retain qualified employees needed to carry out the IESO's mandate;
- To have the flexibility to reward results and demonstrated competencies; and,
- To have compensation levels which are reasonable, responsible and in compliance with provincial regulations.

The philosophy underlying these objectives is that total compensation for executives should enable the IESO to recruit and retain strong leaders with the skills and competencies necessary to carry out the organization's mandate.

Program Governance

The IESO Board establishes the compensation objectives for the following year's program. It delegates the responsibility to thoroughly review the compensation objectives, policies and programs to the Human Resources and Governance Committee of the Board (HRGC), which makes recommendations to the full Board for approval.

The Board is composed of 10 independent, external Directors, appointed by the Minister of Energy, and the President and Chief Executive Officer of the IESO. The Board has broad experience in the electricity industry and public sector organizations, as well as in dealing with human resource matters, including the setting and implementation of compensation policies and programs.

In carrying out its mandate, the Board has access to management's analysis, as well as the recommendations of expert consultants in the compensation field. These programs are reviewed annually with regard to business needs, program objectives and design, industry compensation trends, internal compensation relativities, and external market relativities.

The Board also assesses risks associated with the establishment and implementation of compensation policies and programs. Each year, the Board presides over and approves the IESO's Business Plan. An important component of this process is consideration of, and the implementation of, mitigating actions associated with Enterprise Risk Management. This overarching process includes the assessment of all significant risks to the IESO, including risks associated with its compensation policies and programs.

In addition to the formal governance and oversight structure in place for compensation matters, the IESO discloses compensation levels annually for staff earning \$100,000 or more as part of its public sector salary disclosure. For the IESO, a further level of public review and assurance is provided through a statutorily required annual review of the IESO's expenditures, revenue requirements and fees. Information related to compensation matters, including executive/management compensation and market relativities, is subject to Ontario Energy Board review. A range of intervenors, including small and large consumers, assisted by their legal and professional advisors, are represented in these public proceedings.

Market Comparisons

The IESO reviews the competitiveness of executive compensation levels in relation to a peer group of Canadian organizations and general industry companies every other year at a minimum. The objective is to compare IESO executive compensation levels to those in the marketplace, particularly in relation to the median of the market. The IESO uses the Hay job evaluation methodology for both the executive and management group. The most recent review was completed in 2020.

Prior to 2018, the comparator group used to benchmark the executive jobs was a hybrid of public and private sector employers. Based on changes required under the *Broader Public Sector Executive Compensation Act, 2014* (the “2016 Executive Compensation Framework Regulation”), the comparator group was changed to Canadian Public Sector organizations.

The comparator group represents a range of industries, core business activities and roles that are similar to IESO: electricity, energy, asset management, financial services, infrastructure procurement, engineering and large-scale, complex IT functions.

To comply with the 2016 Executive Compensation Framework, the job evaluation was independently conducted by the Korn Ferry Hay Group using its point system. The Korn Ferry Hay Group evaluated the Vice-President positions based on the job documents and additional information gathered from the CEO. Based on the evaluation points, a salary structure was developed, and executive positions were mapped into it.

Using the market information from the Canadian Public Sector peer group, the maximums for each executive salary grade were determined as the market price point for comparison purposes. The maximums of the salary ranges are defined as the total direct cash compensation (annual base salaries plus annual short-term and long-term target incentive awards) of the target market’s price point at the 50th percentile for each salary grade. The minimums and maximums of each salary range are calculated using typical salary range spreads at executive levels.

Program Description

The IESO program includes fixed and variable compensation, core and flex benefit plans, and pension provisions. IESO Human Resources staff participate in and review results from various compensation surveys and monitor economic trends (such as inflation and unemployment rates) that affect compensation, as well as internal compensation relativities. Based on this data and the IESO business priorities, Human Resources staff develop recommendations on compensation programs. External specialized compensation, benefit and pension consultants are engaged to ensure accurate, representative market compensation data is obtained and current industry compensation trends are being considered, as well as to provide insight and recommended adjustments to current programs.

Program Description – Fixed Compensation

Within the IESO salary ranges, individuals are assessed relative to an established competency model. This model consists of behavioural competencies, such as strategic agility, building effective teams, command skills, and managing with vision and purpose. Assessments are based upon demonstrated competencies. Each individual is awarded a fixed compensation level within their band based upon their assessed competencies.

Program Description – Variable Compensation

To promote a results orientation, the variable pay plan forms part of the total executive compensation package. The IESO Board annually establishes a robust set of performance measures, which are evaluated each year.

The IESO Board assesses corporate performance results and the CEO's individual performance results. Under the plan, having assessed the results against target, the Board has discretion in determining the final performance rating. The Board considers the assessed results, which have been verified through an internal audit process, to award variable compensation.

The variable compensation award for the CEO and Vice-Presidents is capped at 10% of fixed compensation. The plan provides for awards at or below the capped amount depending on the performance results achieved.

Program Description – Group Benefits

The group benefit plan provides a core level of health and dental benefits, life insurance, disability coverage and vacation which can be adjusted by individual employees through a flexible component within the plan. This element gives executives and all other non-represented employees the flexibility to adjust their benefits to meet their individual/family needs.

Program Description – Pension Plan

A defined benefit pension plan provides annual retirement income calculated as 2% of pensionable earnings during the highest paid 60 consecutive months of service multiplied by years of service (36 months for the pension earned prior to January 1, 2017 by the former IESO executives), to a maximum of 35 years. The pension formula is integrated with the Canada Pension Plan (CPP) to provide a level income stream before and after age 65, when the IESO pension is reduced to reflect benefits from CPP. The Plan also has early retirement provisions, as well as commuted value, pension deferral and reciprocal transfer options.

The Plan provides a maximum benefit of 70% of highest paid, pre-retirement pensionable earnings. As the Canada Revenue Agency limits the amount of pension payable from a registered plan, the IESO has a secured supplemental employee retirement plan (SERP) to provide required pension income to meet the commitments of the Plan above that payable from the registered plan.

The Plan also provides other options, including member's life only or joint and survivor pensions, as well as pre-retirement death benefits for surviving spouses or beneficiaries.

Performance Measures and Impact on Compensation

The IESO establishes corporate performance measures aligned with its business priorities during its annual business planning process. These are approved, monitored and assessed by the IESO Board of Directors each year. Individual performance measures supporting one or more corporate performance measures are also developed for each executive. As outlined previously, the corporate results achieved each year impact each executive's variable pay.

For 2021, the Board assessed the corporate results and determined that overall the IESO met expectations for the measures and targets specified. In addition to the corporate measures, each executive also had an individual set of measures and targets aligned with the corporate performance objectives and IESO's business priorities, which were similarly assessed. The Board assessed the results of the CEO and the CEO assessed the performance of the Vice-Presidents which were also reviewed with the Board.

Other Considerations

Compensation decisions may at times be impacted by market factors such as the recruitment of an executive with specialized skills/competencies or possessing unique talents within the industry. To this end, if required, approval of individual arrangements relating to terms of employment may be sought and established.

Compensation Restraints

The IESO executive compensation has been significantly impacted by the compensation restraint legislation in Ontario since 2010. The *Broader Public Sector Accountability Act* ("BPSAA") imposed a general freeze on designated executives' salary, variable pay and benefits and subject to very limited exceptions.

The BPSAA was superseded by the *Broader Public Sector Executive Compensation Act, 2014* ("BPSECA"). The 2016 Executive Compensation Framework Regulation under the BPSECA came into effect for the IESO in February 2018 and permitted retroactive compensation adjustments to September 1, 2017. Subsequent to this, the government repealed this framework regulation and replaced it with the 2018 Compensation Framework Regulation, which imposed a compensation freeze on executive compensation at the levels in effect on August 13, 2018.

Executive Compensation Statement

The 2021 Summary Compensation Table details the annual compensation for the year ended December 31, 2021 for the executives listed. Note: The figures reported as 2021 "Salary Paid" in the 2021 Public Sector Salary Disclosure for the executives include the 2021 earned variable compensation, and deferred benefits such as 2021 vacation.

2021 SUMMARY COMPENSATION TABLE

Name & Position	Base Salary (2021 earnings)	Variable Pay Awarded	Other Annual Compensation ¹	Total Cash Compensation ²
Lesley Gallinger³ President & CEO	\$356,192	\$32,924	\$2,630	\$391,747
Terence Young⁴ VP, Policy Engagement & Innovation/ Interim President and CEO	\$379,591	\$14,489	\$8,464	\$402,544
Barbara Anderson VP, Corporate Services and CFO	\$295,000	\$24,391	\$533.27	\$319,925
Leonard Kula VP, Markets & Reliability and COO	\$385,000	\$32,746	\$23,527	\$441,274
Alex Foord VP, Information & Technology Services and CIO	\$318,000	\$26,648	\$11,650	\$356,298

¹ Represents remaining flex benefit credits, including deferred earned vacation paid out at year end as taxable income

² These amounts will be reported as "Salary Paid" under the Annual Public Sector Salary Disclosure (PSSD)

³ Lesley Gallinger's base salary, variable pay and other annual compensation are all pro rated

⁴ Terence Young's base salary includes an increase to compensate him for assuming the Interim President/CEO role, which he held from September 2020 to July 2021.

Executive Leadership Team, Board of Directors and Advisory Committees to the Board

Executive Leadership Team

Lesley Gallinger

President & CEO

Barbara Anderson

Chief Financial Officer and
Vice-President, Corporate Services

Chuck Farmer

Vice-President, Planning,
Conservation and Resource Adequacy

Alex Foord

Chief Information Officer and
Vice-President, Information
and Technology Services

Leonard Kula

Chief Operating Officer and
Vice-President, Markets
and Reliability

Michael Lyle

Vice-President, Legal Resources
and Corporate Governance

Glenn McDonald

Vice-President,
Market Assessment and Compliance

Julia McNally

Director, Internal Audit

Carla Y. Nell

Vice-President, Corporate
Relations, Stakeholder
Engagement and Innovation

Robin Riddell

Vice-President, Human Resources

Jessica Savage

Program Delivery Executive,
Market Renewal Program

Board of Directors

Joe Oliver

Chair of the Board
*Former federal Minister of Finance,
Minister of Natural Resources, Minister
Responsible for the GTA and Member
of Parliament for Eglinton-Lawrence;
former president and CEO of the
Investment Dealers Association of
Canada and executive director of the
Ontario Securities Commission, and
founding CEO of the Mutual Fund
Dealers Association*

Lesley Gallinger

President and CEO, Independent
Electricity System Operator

Steve Baker

Director
Former president of Union Gas, Enbridge

Michael Bernstein

Director
*President of Juno Advisors Ltd.;
chair of CircuitMeter Inc., and
a director of Biome Renewable*

Tabatha Bull

Director
*President and CEO, Canadian Council for
Aboriginal Business*

Simon Chapelle

Director
*Corporate Director, The Chapelle Group;
Kingston City Councillor*

Patricia Koval

Director
*Former adjunct professor, University of
Toronto; retired senior partner, Torys LLP*

Peter McMullen

Director
*Proprietor, Peter L. McMullen
Professional Corporation*

Lisa Pearson

Director
*Vice-President, Public Affairs,
Extendicare Inc.*

David Sinclair

Director
*Former president and CEO of Kenora
Hydro-Electric Corporation Ltd.; former
chair of the Ontario Municipal Electric
Association (now Electricity Distributors
Association)*

Robert Wong

Director
*Chair of the Broader Public Sector (BPS)
Cyber Security Expert Panel*

Stakeholder Advisory Committee

James Scongack (Vice-Chair)

Chief Development Officer &
Executive Vice President,
Operational Services
Bruce Power
Representing: Generators

Nicolas Bossé

Chief, Energy Transition
BrainBox AI
*Representing: Energy-related
Businesses and Services*

David Butters

President and Chief Executive Officer
Association of Power Producers
of Ontario
Representing: Generators

Brandy Giannetta

Vice-President, Policy, Regulatory &
Government Affairs
Canadian Renewable Energy
Association
Representing: Generators

Ed Gilbert

Corporate Manager
Aamjiwnaang First Nation
Representing: Ontario Communities

Malini Giridhar

Vice-President, Business
Development and Regulatory Affairs
Enbridge Gas Inc.
*Representing: Energy-related Businesses
and Services*

Bala Gnanam

Vice President of Sustainability,
Advocacy & Stakeholder Relations
BOMA Canada
Representing: Consumers

Paul Grod

President & CEO
Rodan Energy
*Representing: Energy Related Businesses
and Services*

Jim Hogan

President and Chief Executive Officer
Entegrus
*Representing: Distributors and
Transmitters*

Bruno Jesus

Vice-President of Planning and
Engineering
Hydro One Networks Inc.
*Representing: Distributors and
Transmitters*

Frank Kallonen

President and Chief Executive Officer
Greater Sudbury Hydro
*Representing: Distributors and
Transmitters*

Amanda Klein

Executive Vice-President, Public &
Regulatory Affairs, and Chief Legal
Officer
Toronto Hydro
*Representing: Distributors and
Transmitters*

Tonja Leach

Executive Director
Quest
Representing: Ontario Communities

Paul Norris

President
Ontario Waterpower Association
Representing: Generators

Mark Passi

Manager, Energy
Glencore
Representing: Consumers

Annette Verschuren

Chair and CEO
NRStor Inc.
*Representing: Energy-related Businesses
and Services*

Agnieszka Wloch

Vice President, Development
Minto Communities Canada
Representing: Consumers

Technical Panel

Michael Lyle (Chair)

Vice-President, Legal Resources and Corporate Governance
Independent Electricity System Operator
Representing: IESO

Jason Chee-Aloy

Managing Director
Power Advisory LLC
Representing: Renewable Generators

Ron Collins

President and Chief Executive Officer
Sinopa Energy Inc.
Representing: Energy-related Businesses and Services

Rob Coulbeck

Special Advisor
Nexus Energy Canada
Representing: Importers/Exporters

Emma Coyle

Director of Regulatory and Environmental Policy
Capital Power
Representing: Market Participant Generators

David Forsyth

Technical Specialist
Association of Major Power Consumers in Ontario
Representing: Market Participant Consumers

Sarah Griffiths

Director, Regulatory Affairs
Enel X
Representing: Demand Response

Jennifer Jayapalan

Director, Energy Markets, Operations and Strategy
Workbench Energy
Representing: Energy Storage

Indra Maharjan

Director of Innovation, Technology and Alternate Delivery
Ontario Clean Water Agency
Representing: Market Participant Consumers

Nick Papanicolaou

Environmental Manager
Lehigh Cement
Representing Market Participant Consumers

Forrest Pengra

Manager of Infrastructure and Technology
Town of Parry Sound
Representing: Residential Consumers

Robert Reinmuller

Director, Transmission System Planning
Hydro One Networks Inc.
Representing: Transmitters

Joe Saunders

Vice-President, Regulatory Compliance and Asset Management
Burlington Hydro
Representing: Distributors

David Short

Senior Director, Power System Assessments
Independent Electricity System Operator
Representing: IESO

Vlad Urukov

Director, Generation Revenue and Planning
Ontario Power Generation
Representing: Market Participant Generators

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