
INDEPENDENT ELECTRICITY SYSTEM OPERATOR

2022 Annual Report

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Message from the CEO



Ontario's electricity grid continues to transform. Demand for reliable, affordable – and increasingly decarbonized – electricity has placed a spotlight on the energy sector's ability to adapt and deliver provincially, nationally and beyond.

Throughout 2022, the IESO made positive strides in support of the transformation taking place in our sector. Across the province, our reliance on electricity is increasing, driven by economic growth, emissions-reduction targets and consumer preferences. Although the exact magnitude and timing of how this transformation will continue to unfold is still to be determined, it is clear that change is happening and the IESO is prepared to respond.

To understand how we are approaching these challenges, we must appreciate and understand how the past has contributed to our present state.

Today, Ontario is one of the cleanest electricity jurisdictions in the world. This is, in large part, because Ontario has been leading a transition over the past two decades that has been characterized by the opening of competitive electricity markets, phasing out of coal, managing nuclear refurbishments, shaping energy efficiency, incorporating renewable supply and decentralizing the grid. The IESO is leveraging the lessons of past achievements so we can adapt and operate in the realities of the present as we set the stage and position ourselves for the next phase of the energy transformation.

Working at the heart of the power system, the IESO must be nimble and responsive to continuing nuclear retirements and refurbishments; the future of natural gas generation; and increasing opportunities for innovation.

We must also be ready for an unprecedented increase in demand and economic growth as heavy industries and other sectors commit to electrification, which includes industrial sector development in mining, steel, electric vehicle battery and hydrogen production; agricultural sector greenhouse construction; and the transportation sector.

As the grid operator and planner, it is critical that the IESO support economic growth and prosperity emerging from this transformation by ensuring adequate supply where and when it is needed most. The good news is that we are well past the starting point and are continuing to move forward.

This past year, the IESO initiated a series of procurements to secure more than 6,000 megawatts (MW) of supply. This included acquiring more than 1,400 MW through our 2022 annual Capacity Auction and over 700 MW of existing supply from 2024 – 2026 through a medium-term request for proposals. Our long-term procurement is targeting 4,000 MW of capacity, which includes 2,500 MW of energy storage – the largest in Canadian history.

We were proud to release *Pathways to Decarbonization*, a landmark report that evaluated a moratorium on new natural gas generating stations in Ontario and developed an achievable pathway to decarbonization in the electricity system. Our findings are helping to enable the discussions – and actions – we need in order to achieve emissions-reduction targets.

Our work has been inspired by our refreshed corporate strategy that reinforces our unwavering commitment to meet Ontario's electricity needs, and informed by broad societal trends and anchored by robust performance measures. This five-year strategy takes our focus on collaboration one step further by connecting the dots between three core pillars and the individual initiatives that will help us achieve them.

That includes taking a lead role to **drive and guide the sector's future** by strengthening relationships with stakeholders and Indigenous communities; effectively responding to changes in customer choice and policy; while acting as an advisor and participant in discussions on how to create the sustainable, future-state energy system.

We also want to **ensure system reliability while supporting cost effectiveness**, and will transform real-time markets and adapt our planning processes, cost-effectively acquire services and champion cyber security.

To **drive business transformation**, we will evolve our internal processes, technologies and tools, identifying and building next-generation skills and competencies while defining and enhancing the IESO culture and employee experience.

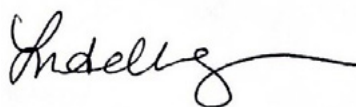
Over the past year, as this report will showcase, there were many initiatives and successes that align with the spirit and purpose of these corporate pillars. The IESO also continued to work cohesively with governments, stakeholders and communities to develop solutions for the short and long term while exploring the multitude of opportunities that lie ahead.

In doing so, we relied on a diversity of voices and viewpoints, and embraced those who want to play a role by offering them opportunities to contribute. Indigenous communities, municipalities, and the growing number of partners all have a crucial role in securing our collective energy future. We cannot move forward or expand the system without community involvement, collaboration and support.

From my perspective, the energy future is ripe for innovation and prosperity through creativity and engagement, balancing reliability and affordability with a focus on reducing emissions. We are intent on striking the right balance between resiliency and cost-certainty, while beginning an orderly and thoughtful transition with no regret actions.

While this pathway requires foresight, agility and discipline, I am confident that by galvanizing collaboration across the entire value chain – industry and communities, producers and consumers, innovators and academics – we will be well-positioned to deliver the essential service that Ontario will require, and our actions in 2022 helped support that.

The only constant is change and we are prepared to embrace it.

A handwritten signature in black ink, appearing to read 'Lesley Gallinger', with a long, sweeping horizontal line extending to the right.

Lesley Gallinger
President and CEO

2022 Year in Review

A reliable, affordable and sustainable electricity system is central to the well-being of Ontario's economy and communities. 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. Throughout 2022, the IESO focused its efforts on preparing for a rapid and far-reaching transformation of Ontario's power grid. At the same time, the IESO continued to operate the system and wholesale market reliably and efficiently.

This approach is evident in the IESO's refreshed corporate strategy – *Preparing for the Electricity System of Tomorrow* – that describes the plan forward so the IESO can deliver on its mandate to position Ontario for growth and prosperity.

The scope and pace of change that the electricity sector is facing requires purposeful and transparent engagement with stakeholders and communities to **drive and guide the sector's future, ensure system reliability while supporting cost effectiveness**, and **drive business transformation** for the benefit of residents, communities, businesses, and industries.

This *Annual Report* highlights activities and accomplishments the IESO has achieved in 2022 to ensure that Ontario's electricity system is positioned to overcome challenges and capture opportunities created through this energy transformation.

Drive and Guide the Sector's Future

Realizing the Realities of the Future Grid

Ontario's electricity system comprises about three per cent of economy-wide emissions, creating a clean energy advantage that will help support economic development and drive broad emissions reductions as businesses focus on their own decarbonization efforts. In 2022, about 90 per cent of Ontario's energy supply came from non-emitting sources such as nuclear, hydro and wind.

A Landmark Report

Following the release of a gas phase-out study – *Decarbonization and Ontario's Electricity System* – in October 2021, the IESO immediately started work to better understand what a potential pathway for Ontario to fully decarbonize the system would look like. In December 2022, findings were included in *Pathways to Decarbonization*, a report designed to inspire important conversations that are crucial to bringing forward options that can eliminate emissions from the grid.

The two scenarios presented within the report are not integrated power system plans. Rather, they identified potential opportunities and challenges to consider, particularly as demand for electricity grows and Ontario's resource mix evolves.

The report found that a moratorium on new natural gas is possible after the province's current round of electricity resource procurements is complete, as long as development on generation and transmission begins now. The report also identified a zero-emissions supply mix for 2050 that is more than twice the size of today's system.

Informed by robust planning, Ontario must begin to acquire new non-emitting resources to meet the province's growing needs and must invest in development work to ensure that non-emitting options are available in the coming decades.

The process of fully eliminating emissions from the grid itself will be a significant and complex undertaking. Through the IESO's ongoing commitment to work with a wide range of partners to assess risks and overcome challenges, it is possible to achieve an orderly transition toward a decarbonized electricity system that remains reliable, affordable and sustainable. The IESO will also incorporate the many learnings from this report into its core work, including more explicitly addressing the risks of climate change and the ongoing energy transition in its planning and procurement processes.

New Horizons Supporting the Energy Transformation

Innovation is central to decarbonization and will need to take a variety of forms. Whether it be testing new strategies to improve existing approaches to reliability, responding creatively to support government policies, or implementing emerging technologies, there are many ways to define and apply innovation within the context of Ontario's electricity system transformation.

For the IESO, innovation is an opportunity to work with partners across the energy sector and beyond to identify and develop necessary solutions to the challenges faced with the agility needed to recognize and react to ideas based on need and timing.

In 2022, the Grid Innovation Fund (GIF) achieved record impact through a doubling of its annual investment to \$17.7 million. Partnering with the Ontario Energy Board's Innovation Sandbox, GIF-supported projects will evaluate solutions to the regulatory, market and operational challenges associated with unlocking the potential of Distributed Energy Resources (DERs), which are a variety of small-scale electricity generation, storage and load-modifying technologies connected to local distribution networks.

The goal is to demonstrate how DERs can help defer the need for costly electricity infrastructure investments while providing savings to electricity consumers. In addition, it will provide participating businesses with opportunities to develop new sources of revenue and reduce their carbon footprints while contributing to the reliability and sustainability of the grid.

Onboarding New Technologies

Bringing in new technologies will be the next important undertaking to support energy transformation and decarbonization. For example, hybrid facilities, which consist of generation and storage technologies, have the potential to play an important role in helping meet Ontario's future electricity needs. Expiring wind and solar contracts in Ontario along with declining technology costs for battery storage are expected to drive hybrid facility development over the next decade.

In order to facilitate this growth, the IESO released *Enabling Foundational Hybrid Facility Models in the IESO-Administered Markets* in June 2022, which identified foundational hybrid facility models to participate in the IESO-administered markets. Hybrid facilities will support meeting Ontario's reliability and operability needs, as well as increase market competition.

Maximizing the Impact of Energy Efficiency

As efforts to reduce emissions across all sectors continue to accelerate, conservation and demand management (CDM) seamlessly aligns with broader economic development and decarbonization objectives. As electricity demand is forecasted to grow steadily across the province and existing resources retire or enter refurbishment, the value of CDM to the system increases as a low-cost, non-emitting resource that can respond to changing system and customer needs.

In 2022, the IESO conducted a mid-term review of the CDM programs launched in 2021 as part of the four-year *2021 - 2024 CDM Framework*, and determined that the original energy and demand savings targets are on track. In addition, the Government of Ontario directed the IESO to launch four new and expanded CDM programs in October that include a new offering for demand response incentives for residential consumers; targeted support for greenhouses in Southwest Ontario, which includes behind-the-meter DERs; enhancements to the Save on Energy Retrofit Program; and enhancements to the Local Initiatives Program to support regional energy needs.

The IESO has also offered dedicated energy-efficiency programs targeting the income-qualified sector, as well as on-reserve First Nations, for more than a decade, with the objective of supporting equitable access to energy-efficiency programming and energy affordability.

In 2022, the IESO enhanced the Energy Affordability Program that supports income-eligible consumers through a collaboration with Enbridge that resulted in a one-window delivery approach to improve the customer experience, leverage economies of scale and respond to stakeholder feedback in support of collaboration between electricity and natural gas conservation. The program is also available to on- and off-reserve First Nations and Métis community members who meet the eligibility criteria.

Launched in July 2022, the First Nations Community Building Retrofit Program provides funding and technical support to on-reserve First Nations to improve the energy efficiency of their band-owned commercial and institutional facilities, manage their electricity use more effectively, and save on energy costs.

Strengthening Relationships with Municipalities, Indigenous Communities and Stakeholders

Transformation can only be fueled through collaboration. In 2022, the IESO increased municipal and Indigenous outreach activities, and focused on building capacity within local communities to offer tools and provide support for purposeful engagement in the IESO's electricity planning initiatives and decision-making. This included discussions about the need for new generation, transmission and storage to support Ontario's electricity transformation; and working closely with community leaders to leverage and promote energy efficiency and integrated local solutions.

Municipalities

The IESO took full advantage of opportunities for the reintroduction of in-person and virtual meetings by engaging in more than 70 formal outreach activities with a wide range of municipal stakeholders – including elected officials, chief administrative officers and staff in economic development, planning, environment and sustainability – on various electricity planning and procurement activities. The discussions provided the IESO with valuable insights, including what information municipal decision makers need to contribute to and be part of Ontario's energy future.

Indigenous Communities

The IESO is grateful for the positive relationships that have been built with Indigenous communities over many years. Continuous commitment to these relationships has created the foundation for an effective ongoing dialogue. In 2022, the IESO hosted its sixth First Nations Energy Symposium: *Planning for Success: Energy Solutions for First Nations Communities*. Sessions touched on the role of women and youth in driving energy-related projects, energy efficiency programs, effective project management, community engagement practices, and building community capacity.

A highlight of the event included a panel discussion featuring Community Energy Champions (CECs) who work within their communities to help plan and advance community-driven energy-related priorities. With almost 50 CECs coming through the program to date, in November 2022 Natural Resources Canada announced it will be supporting the ongoing implementation of this valuable program.

In 2022, the IESO continued to work beside Indigenous partners to support their long-term goals through a series of targeted programs.

This included the Education and Capacity Building Program that supports awareness, education, skills, and capacity building to help prepare First Nations and Métis communities and organizations to fully leverage energy opportunities; the Indigenous Community Energy Plan Program, which supports the development or update of a community energy plan designed to enhance community energy security; and the Indigenous Energy Projects Program that assesses and develops energy projects and partnerships.

Sector Stakeholders

The IESO continuously seeks input from a broad and diverse set of perspectives from across the electricity sector on specific initiatives. Under the IESO's Engagement Framework, regularly designated engagement meetings take place each month. This format allows interested parties to effectively plan their participation in the IESO's engagement activities, and they can do so through any of the IESO's four engagement categories: Forecasting and Planning; Resource Acquisition; Operations; and Sector Evolution.

In 2022, more than 6,000 participants joined more than 90 stakeholder engagements. Collectively, these engagements offered stakeholders the opportunity to actively participate in driving and guiding the sector's future through various types of forums and interactions, including information sessions; reviewing draft market rules through a voting-body technical panel; strategic policy-level support from industry-wide advisory groups; and shaping and building program and contract designs.

In addition, the IESO's Stakeholder Advisory Committee – appointed representatives who offer advice and recommendations on market development, conservation and planning decisions – formed cross-functional working groups to outline Challenge Statements that were finalized and presented directly to the IESO's Board of Directors and Executive Leadership Team for consideration.

The statements articulated opportunity or risk, a common set of facts and rationale, defining the role of the IESO and other stakeholders, as well as strategic considerations, in the context of four areas: Urgency and Timing of New Resources; Maximizing Existing Resources; Resource Adequacy; and Modernization and Efficiency.

Ensure System Reliability while Supporting Cost-Effectiveness

Balancing Reliability and Affordability in the Electricity Sector

After years of strong supply, Ontario is entering a period of growing electricity system needs where actions are needed to ensure the continued reliability of the grid. This last year marked the second full cycle of the implementation of the IESO's *Resource Adequacy Framework*, which sets out a long-term competitive strategy to acquire resources while balancing ratepayer and supplier risks.

A View into the Future

The *Annual Planning Outlook* (APO) provides a long-term view of the adequacy of the electricity system by forecasting needs, and explores the province's ability to meet them. Looking forward using current and confirmed information, it gives the sector the most predictive signals possible to serve as a guide for short- and near-term investment decisions and activity.

The 2022 APO, released in conjunction with *Pathways to Decarbonization* and *CDM Framework Mid-Term Review* in December, anticipated increased consumption from sectors such as agriculture and transportation, and projects such as new battery manufacturing facilities and mining operations, that support decarbonization. The forecast also illustrated how electrification is changing the shape of Ontario's demand. Accelerated electric vehicle adoption and charging stations, new building electrification policy, and changes to agricultural sector demand profiles are expected to shift the overall annual system peaks from mid-summer afternoons to mid-winter overnight periods by 2036.

The result of this shift is a moderate rise in the average growth of demand, reaching about 1.9 per cent annually compared to 1.7 per cent in the 2021 forecast. For the first time, the APO also presented a Schedule of Planning Activities, which identified the IESO's proposed schedule for completing future bulk power system planning.

Adding Capacity to the Grid to Maintain Reliability

In response to Ontario's emerging electricity system needs, the IESO initiated a *Long-Term Request for Proposals* process to secure 4,000 MW to meet mid-decade needs. Approximately 2,500 MW of this supply is anticipated to comprise energy storage to provide flexibility to the power system, including other non-emitting forms of supply such as biofuels to help meet peak demands, as well as up to 1,500 MW of natural gas capacity in service between 2025 and 2027 to ensure reliability and affordability.

This targeted mix of resources was based on an assessment of the potential readiness of new projects to provide electricity capacity given current production and project development issues. Like other system operators, the IESO will build greater operational experience with batteries at grid scale while relying on additional natural gas capacity to ensure reliability when system conditions are strained.

After issuing a request for qualifications from potential developers for long-term supply projects, the IESO qualified 55 applicants. Collectively, these applicants demonstrated a broad international interest in investing in Ontario's energy sector and reinforced the value of competitive procurements to meet the province's reliability needs cost-effectively.

The IESO also concluded the first in a series of medium-term request for proposals (RFPs), acquiring new five-year commitments from existing resources that are currently off-contract or coming off contract. The continued use of existing facilities is a cost-effective way to help address immediate electricity supply needs, as well as ensuring these facilities continue to support reliability in Ontario. This year's medium-term RFP offered contracts to five wind and natural gas facilities that, together, will contribute more than 700 MW of capacity to the system, ensuring ongoing value from previous investments in supply.

In December 2022, the IESO held a Capacity Auction with increased targets compared to 2021, and acquired 1,430 MW of supply for summer 2023 and 1,160 MW for winter 2023 - 24, which is equivalent to the electricity needed to power a city the size of Ottawa. This auction also received enrollments totalling more than double the megawatt target, which demonstrated the diversity and affordability of options available. As demand increases - coupled with pressure on supply due to nuclear refurbishments - the annual auction provides the flexibility needed to balance near-term supply and demand.

Taking Action to Adapt to the Evolving Grid

When it comes to electricity planning, understanding the priorities of consumers, communities and businesses at the regional level is critical. Different parts of the province have unique characteristics and energy needs, which the IESO must understand, consider and plan for each and every day.

Moving Electricity Where Needed

Power system planning ensures a reliable supply of electricity around the province by looking at the electricity needs of the province and each region's unique needs; it then considers conservation, generation, transmission and distribution, and innovative resources to meet these needs.

As it relates to transmission, the IESO highlighted needs in various areas of the province to meet growing demand. In 2022, five integrated regional resource plans and five bulk transmission system plans were published, recommending approximately \$3 billion in new transmission infrastructure across the province.

For example, in December 2022 the IESO published *Gatineau Corridor End-of-Life Study*, which is a \$650 million plan recommending a new 230 kV transmission line into Peterborough from Pickering or Oshawa and refurbishing approximately 800 km of transmission lines that are reaching end-of-life.

In October 2022, the IESO published *Need for Northeast Bulk System Reinforcement*, which is an approximately \$1.25 - \$1.5 billion plan recommending three new transmission lines in Northeastern Ontario to supply increasing demand for electricity from the industrial sector around Sault Ste. Marie and Timmins.

Moving a plan into reality is also a significant collaborative achievement. In 2022, the IESO helped to successfully integrate the new East-West Tie Transmission Project into the grid. This new set of circuits went into service in March paralleling most of the existing transmission corridor and addressing the growing demand for electricity in the northwest region by increasing electricity supply to the region and long-standing bottlenecks that have restricted electricity flow.

From the numerous construction stages through to in-service, the IESO had to develop operating instructions, outage assessments, as well as modify operating tools and models to enable the energy market to benefit from these new lines, as well as to maintain reliability throughout Northwestern Ontario given the change that these lines brought to the region.

Wataynikaneyap Power – comprising 24 First Nations working together to connect 16 remote communities currently powered by diesel – achieved an important project milestone by energizing Phase 1 of its transmission system in August. The IESO developed the original business case and plans for the project in 2014 and since then has continued to support its development and connection to the IESO-controlled grid.

Responding to Market and Weather Conditions

To ensure reliability, the IESO must maintain short-term outage management planning, which continued to be a priority in 2022, as the IESO started to experience tighter system conditions than in previous years.

The IESO's Market Operations and Power System Assessments teams worked closely with market participants to successfully manage regulatory maintenance outages while maintaining system reliability.

In May 2022, Ontario experienced a historic derecho – a powerful, long-lasting and far-reaching straight-line windstorm – that caused significant damage to the power grid. A total of 23 transmission circuits, three auto-transformers, and generators at five plants were impacted; approximately 400 MW of load was interrupted; and numerous circuits had conductors downed and structures were damaged. The IESO's Operations function was resilient in ensuring minimal interruption to the transmission-connected load in the days following the storm, which included supporting restoration, balancing supply and demand, and co-ordinating with market participants as infrastructure was brought back into service.

A Safe and Secure Grid

Cyber security is a priority for utilities around the world as threat actors are becoming increasingly sophisticated and well-resourced in the Digital Age. For the electricity sector, cyber security resources are being pushed harder than ever as the world deals with the cyber implications stemming from ongoing geopolitical conflicts, growing impacts of ransomware, and management of ongoing system vulnerabilities.

Strengthening Connections

The energy sector, in particular, must navigate through turbulence and focus resources effectively to protect and maintain grid reliability. That is why the IESO hosted its Cyber Security Executive Briefing in November for information security professionals in the energy sector that featured insight and expertise on a series of topics critical to cyber security.

To support sector best practices, the IESO also developed and debuted *Cyber Tabletop in a Box*, a powerful supplemental resource that helps organizations conduct cyber tabletop exercises to contribute to the resiliency of cyber incident response programs.

The IESO also continued to operate and evolve Lighthouse, a valuable cyber defence program designed to improve the resilience of the bulk electricity system. This detection, assessment and information-sharing service and resource stems from independent research, together with relationships with partners and stakeholders, that builds on the IESO's existing cyber security leadership and capabilities.

Enhancing the Efficiency of Ontario's Electricity Markets

The Market Renewal Program (MRP) is modernizing Ontario's electricity markets to deliver greater efficiencies, as well as preparing for the electricity grid of the future. The new market structure features a single-schedule system and day-ahead market commitments that are critical for the efficient integration of storage and other innovative forms of supply.

The MRP is now in its final phase, which includes development of market rules and market manuals; software and solution development on more than 10 legacy systems that work together to dispatch and settle the wholesale electricity market; and engaging market participants in testing and training.

In 2022, an MRP Implementation Working Group of stakeholders was established to provide strategic advice and input on navigating implementation issues and participant readiness timelines in the project schedule. The IESO completed a thorough review of the MRP schedule and announced a revised in-service date of May 2025 and a forecasted budget of \$233 million. The project will continue to deliver considerable ratepayer value by providing more than \$700 million in efficiencies over a 10-year period, as well as the platform needed to expertly integrate Ontario's changing resource mix.

Following extensive discussions with stakeholders, the Technical Panel also recommended, and the IESO Board provisionally approved, market rules that will enable enhanced consumer protection and fairness to all suppliers as the IESO introduces locational pricing under the MRP.

In addition, the IESO completed the first phase of testing for the new dispatch scheduling optimization system – the engine at the heart of electricity markets – that marked a major step forward for the MRP validating the capability of the most complex and critical system in these efforts to drive efficiencies.

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 2022.

In 2022, MACD issued one new Statement of Approach and completed two 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 2022, these activities led to issuing financial penalties, or recovering unwarranted payments, totaling approximately \$7 million.

Drive Business Transformation

Building an Inclusive Culture That Empowers Change

In order to support the energy transformation around the province, the IESO must transform within to meet the needs of the consumers and communities it serves and the sector at large.

External Recognition of the IESO

For a second consecutive year, the IESO was named one of the Greater Toronto Area's Top Employers, an annual competition that recognizes the region's most dynamic and progressive places to work. Organizations are evaluated according to eight specific criteria, including work and social atmosphere, compensation and benefits, and training and development opportunities.

As part of the Top Employer recognition, the IESO was highlighted for the learning and development opportunities provided to employees, such as funding for internal and external courses and programs and the IESO's annual Learning Week. In July 2022, the IESO was also named an Excellence Awardee for the Canadian HR Awards' Best Learning and Development Strategy, which celebrates employers that have delivered outstanding organizational benefits by directly linking the training needs of their people to the needs of their organization.

Valuing Diverse Expertise and Perspectives

Promoting inclusivity and belonging has long been a priority of the IESO.

The IESO's values form the foundation of efforts to develop an inclusive workplace, one where everyone's contributions and perspectives matter.

In 2022, the IESO was pleased to support the development of a sector-wide baseline study, run by StepUp Energy, a non-profit organization dedicated to equity, diversity and inclusion in the energy space. The study measured representation and level of inclusion of people with different identities across Canada's energy sector, as well as how employees feel about their organization's equity, diversity and inclusion objectives, policies and commitments.

In helping the IESO better understand the full diversity of its own workforce, a Self-ID program was launched in November 2022 that encourages voluntary submission of demographic data from employees. This anonymized data will be used in aggregate to help identify further actions the organization can take on equity, diversity and inclusion, and measure progress towards creating a more inclusive and equitable workplace.

Acting on Feedback

The IESO launched a six-month hybrid model in March 2022 that allowed employees to work interchangeably between an IESO office and a remote location, recognizing the value and benefit of employees having flexibility up to three-days per week. Robust feedback from the mid-point and end-of-pilot surveys was sought, and in addition to preferring to maintain remote flexibility and achieve work-life balance, employees reinforced the importance of having in-office days where enough colleagues are on-site to make the overall work experience enjoyable and in-person collaboration effective.

Continuous Learning

The IESO's strategic investments in learning and development are made with a view to align programs with corporate priorities and interests. In September 2022, the IESO hosted an annual Learning Week, offering ten one-hour learning sessions to all employees on topics such as Market Renewal, climate action, cyber security, artificial intelligence, and the future of the energy system.

The IESO also launched a new business learning curriculum to support career development by building business and technical competencies that will enhance employees' understanding and impact on IESO's core mandate and strategy. The IESO also partnered with Western University's Ivey Business School to implement a Senior Leadership Program that helps leaders make mindful choices in how they lead others; build organizational commitments through strategic goals; and design processes to respond to evolving business contexts.

As part of the IESO's continued focus on career growth and development, two new modules were introduced in 2022. In these modules, individual contributors practiced career conversations to highlight career goals, aspirations and their unique value proposition, while leaders learned to facilitate career conversations to support employees in their career development.

Doing Business with Others

In 2022, the IESO developed a supplier diversity strategy to facilitate access to procurement opportunities to businesses that are at least 51 per cent owned, managed and controlled by persons who identify as one or more of the following: Indigenous; women; veteran; disabled; visible minority; and Lesbian, Gay, Bisexual, Transgender, Queer or Questioning, and Two-Spirit.

The goal is to engage diverse suppliers in a meaningful and measurable way with a view to increasing awareness of IESO procurement opportunities, building vendor capabilities and stimulating competition. When fully implemented, this new program will leverage the skills, perspectives and capabilities of diverse vendors and demonstrate the IESO's commitment to the principles of fair, transparent and accessible procurement practices.

Real-Time Management

While the IESO has dedicated considerable effort to support a cultural transformation, it continues to invest in its systems and processes to support growing demands. Central to the IESO's identity is expertise in the real-time management of Ontario's Bulk Electrical System, and that depends on accurate and reliable information to assess the state of the IESO-controlled grid. To obtain this, the IESO relies on an Energy Management System (EMS), which monitors important power system variables such as power flows and voltages at different locations on the grid, and facilitates studies that ensure operating plans deal with contingencies.

In 2022, the IESO updated the EMS to improve platform availability; address emerging needs, such as improvements that allow new technologies to become integrated suppliers of regulation services; and facilitate greater awareness of neighbouring electrical systems, which allows IESO to proactively position the grid to maintain reliability following disturbances or rapidly changing market conditions.

Progress Toward the Achievement of Performance Measures As Set Out in the Business Plan

With demand for electricity on the rise, additional resources required to meet growing needs, and new technologies providing options to meet those needs, the power system is facing some unique challenges in the coming years. The IESO's 2022-2024 Business Plan positions the organization well to deliver the reliable, resilient and efficient grid and market on which Ontarians rely.

The IESO's performance management program also provides an important level of oversight for the organization and its stakeholders, and helps to ensure accountability and course correction, as needed. It is also used as a tool by the IESO's Board of Directors to assess organizational and management performance, designed to align objectives and incentives to the achievement of IESO's strategic objectives and priorities, and accordingly, may be modified should those priorities change in the course of the year.

While the Board relies upon these measures as the starting point for assessing management's performance, the final assessment will also reflect the Board's judgement as to the IESO's performance in light of circumstances that unfolded over the year.

The IESO has established forward-looking, performance measures and targets that align with strategy to drive action and progress toward the achievement of the organization's overall mandate and strategic objectives. These measures and targets reflect the desired outcome at the end of the strategic planning period and align with the IESO's core strategies.

Measure 1: Employee Engagement

Commitment to the execution of enterprise priorities

Rating: Did Not Achieve

Target	Result	Discussion
Annual employee pulse survey results sustain 4% increased performance. ¹	3%	Despite increases in all three scores that comprise this measure, the overall increase of 3% is shy of the 4% target. Due to the equal weighted average calculation of this measure, the outperformance on question (i) was counter-balanced against the lower average score of question (iii). The composite breakdown is as follows: i. In response to the question “The IESO is taking steps to improve the learning and development opportunities offered to employees” the average score increased by 5 compared to 2021 to 69. ii. In response to the question “I am satisfied with the learning and training opportunities at the IESO” the average score increased by 3 compared to 2021 to 65. iii. In response to the question “I have opportunity for professional growth and development at the IESO” the average score increased by 1 compared to 2021 to 61.
What it means		Having a highly engaged workforce will be a critical differentiator in achieving alignment of culture, mindset, skills and capabilities to deliver on strategy. The purpose of this metric is to measure engagement. Each year different values are assessed to provide robust insight into overall engagement over a five-year period.

¹ For 2022, questions include opportunity for professional growth and development at the IESO; satisfaction with the learning and training opportunities at the IESO; and the IESO is taking steps to improve learning and development opportunities offered to employees. For clarity, one value could increase more than 4% and one not increase by 4% but if the average increase is 4%, then the corporate performance metric is achieved.

Measure 2: Organizational Agility

Openness to change

Rating: Did Not Achieve

Target	Result	Discussion
Annual employee survey results of 70%.	68%	Key actions taken in 2022 included: ▪ Rolled out a refreshed corporate strategy, and discussed how the industry is transitioning and how the IESO will drive and guide the sector. ▪ Launched an Organizational Alignment Review and engaged all leaders in discussions on how our structure, roles and responsibilities need to evolve in support of the strategy. ▪ Relaunched the hybrid work model pilot and asked leaders and employees to consider their teams, accountabilities, and clients in making it a success.
What it means		Openness to change is a core value of the IESO and is an important determinant in achieving culture and workforce transformation. Note: the IESO increased its score on openness to change from 61% favourable in 2020 to 68% favourable in 2021. Although it remained flat in 2022, it is still much higher compared to 2020, and the IESO is on track to meet its 2% increase year-over-year goal over the five-year plan.

Measure 3: Operational Efficiency

Strategic Initiatives schedule adherence

Rating: Achieved

Target	Result	Discussion
No more than two Strategic Initiatives deviate from their approved project plans.	2	Two projects from the Strategic Initiatives portfolio deviated from their approved plans in 2022: ▪ Market Renewal Program (MRP). The previously projected in-service date of November 2023 has been revised to May 2025. Integrating the foundational changes required across the more than 10 legacy systems that work together to dispatch and settle the wholesale electricity market requires more time for solution development and testing than originally anticipated. Given that the systems MRP is changing are integral to reliability and accurate settlement of the wholesale electricity market, it is imperative that the IESO and market participants have sufficient time to test and prepare for these changes. The IESO's Board of Directors approved the revised schedule in August 2022. ▪ Accessibility of Operating Reserve. The project was initially expected to complete by November 30, 2022. In 2022, an exception report moved the original implementation date beyond the expected November 30 in-service completion.
What it means		This measure identifies cost-efficiency performance by completing Strategic Initiatives on time as established by the Integrated Project Plan and Project Charter. Schedule completion is an important criterion in assessing operational effectiveness. Generally, time and cost are directly proportional, therefore, improper utilization of time leads to costs and resource constraints. The measure provides an important tracking mechanism for continuous improvement opportunities.

Measure 4: Stakeholder Satisfaction

Engagement process

Rating: Did Not Achieve

Target	Result	Discussion
80%	74%	While the majority (74%) of survey participants report their experience with IESO engagements has met or exceeded their expectations, the measure target has not been met. While directionally lower than last year, Ipsos, the third-party survey provider, does not consider the change to be statistically significant. At a high level, respondents cite a lack of transparency in decision-making, pre-determined outcomes, and timing concerns including aggressive project timelines as concerns impacting their responses. The detailed rationale provided by stakeholders for their rating, as well as the full set of survey results, will be used as key inputs to inform the engagement framework refresh that is scheduled to begin in early 2023.
What it means		Positive annual survey responses indicate that the IESO's stakeholders are confident with the engagement process. This metric supports the IESO's commitment to build long-term trust with stakeholders to arrive at decisions. The result reflects the percentage of stakeholders who indicate their experience with the IESO's engagement meets or exceeds their expectations.

Measure 5: Cost-Effectiveness (Short-Term Demand Forecast)

Short-term (day ahead) forecast accuracy

Rating: Achieved

Target	Result	Discussion
Annual forecast error within $\pm 2.5\%$ (actual vs. forecast).	+2.1%	In 2022, the IESO's short-term operational forecast was within the expected target tolerance range ($\pm 2.5\%$) with a result of 2.10%.
What it means		The forecasting measure serves as an indicator of grid reliability and the efficiency of the market. The closer the forecast is to actual demand, the lower the risk to reliable grid operations and the more efficiently system needs can be met by the IESO-Administered Markets. Mean Absolute Percentage Error (MAPE) is one of the most commonly used statistical performance indicators to measure forecast accuracy. MAPE is the sum of the individual absolute errors divided by the demand (i.e., each period separately). It is the average of the percentage errors.

Measure 6: Cost Effectiveness (Energy Curtailments Index)

Resource balance: Energy Curtailments Index

Rating: Achieved

Target	Result	Discussion
2% reduction (improvement) from 2021 index value of 1.77% (2022 = 1.74).	0.68%	In 2022, the Energy Curtailments Index further decreased to 0.68% and meeting the target of 1.74%. A lower value indicates improvement, and this result concurs with the system conditions of more demand than the previous year and less available supply capacity from nuclear, hydro, and gas due to planned outages and lower water supply, which requires less curtailment.
What it means		The Energy Curtailments Index is a composite measurement of energy curtailments (i.e., action taken to forgo energy production) maneuvering down the output of nuclear or feathering wind turbines. Changes year-over-year can be volatile and sensitive to unpredictable system changes. However, when considered over multiple years, an average of this measurement is useful as it indicates existence of chronic oversupply conditions; inflexibility of the resource mix; and whether the IESO is cost-effectively managing system needs. Curtailed energy is expressed as a percentage of total energy production per the formula below. A declining trend is a positive indicator. $\text{Curtailed Energy} = (\text{Annual wind, solar, and nuclear energy curtailment}) \div (\text{Total energy production}) \times 100\%$

Measure 7: Cost-Effectiveness (Energy Shortage Index)

Resource balance: Energy Shortage Index representing the instances of energy and/or operating reserve shortfall annually

Rating: Did Not achieve

Target	Result	Discussion
2% reduction (improvement) from 2021 index value of 0.065% (2022 = 0.064%).	0.139%	In 2022 the Energy Shortage Index increased to 0.139% missing the target of 0.064%, and a lower value indicates improvement. For 2022, there was a total of 146 shortage intervals out of 105,120 intervals. This has more than doubled in comparison to 2021 where there was a total of 61 shortage intervals. The increase of shortage intervals was due to tighter system conditions from increased demand and decreased available capacity due to increased outages in nuclear and gas resources. The tight conditions were also concentrated within a few days where demand was high or when Operating Reserve supply was tight especially during freshet.
What it means		The Energy Shortage Index is a composite measurement of energy/operating reserve shortages. Energy/operating reserve shortages, which do not happen often, indicate how tight the system is in meeting energy and ancillary service needs (i.e., it is an indicator of undersupply). Energy/operating reserve shortages are each expressed as a percentage of total dispatch intervals in a year per the formula below. A declining trend is a positive indicator. Shortage Frequency = (Annual number of 5-minute intervals short of energy/operating reserve) ÷ (8,760 hours × 12 5-minute intervals per hour) × 100%

Financial Performance Analysis

The following provides an overview of the Independent Electricity System Operator **core operations** financial performance compared to the 2022 business plan.

As part of the Independent Electricity System Operator (IESO) mandate, contained in Part II of the *Electricity Act, 1998* (Act) and associated Ontario regulations, the IESO performs work that is funded outside of the IESO's usage fees approved by the Ontario Energy Board (OEB), namely the Smart Metering Entity (SME), the Market Sanctions and Payment Adjustments, and programs delivered on behalf of the Government of Ontario. The following financial performance analysis is focused on the results compared to the 2022 business plan of IESO's core operations funded through the OEB-approved system fees earned on a rate per megawatt of electricity withdrawn from the IESO-controlled grid, and excludes financial results on operations funded through other sources as they are not part of the Business Plan approved by the Ministry of Energy.

- a) In the Statement of Operations and Accumulated Deficit section of the Annual Report, the IESO Core Operations recorded revenues of \$206.5 million as of December 31, 2022 compared to a budget of \$207.0 million, this is a variance of \$0.5 million. Overall revenues are essentially aligned to the budget, driven by upside of Other Revenue (Note 11) associated with overnight interest rates and registration fees higher than assumed in the budget, as well as higher income from short-term investments, and electricity demand volumes greater than anticipated due to extreme weather patterns in winter and summer of 2022; these are offset by the provision for market rebate based on surplus over the current approved operating reserve level of \$10 million (Note 7).
- b) The core operation expenses of \$202.0 million (Note 12) shown in the Statement of Operations and Accumulated Deficit section of the Annual Report, is \$5.0 million lower than the budget of \$207.0 million. A key variance driver between the budget and the actual is the treatment of the annual amortization of the accumulated deficit resulting from the Public Sector Accounting Standards (PSAS) transition item corresponding to the change in pension and other-post employment benefits (Note 6), which is included in the budget in order to recover it over time through the IESO's annual system fees revenue. In addition, delays in implementation of capital projects drove savings in amortization expenses. The savings from lower than planned full-time equivalent (FTE) employees was mostly offset by one-time adjustment of other post-employment benefits (OPEB) expense to recognize increase in liability caused by collective agreement arbitration settlement.
- c) In the Statement of Change in Net Debt, the capital portfolio of \$62.2 million is \$9.0 million below the budget due to lower core operations capital spending driven by delays in hardware purchases, vendor's progress towards milestones, and lower vendor pricing on a number of higher value infrastructure projects; in addition to MRP revised project schedule.

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 judgement, 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 8, 2023.

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 8, 2023



Barbara Anderson
Chief Financial Officer and
Vice-President, Corporate Services
Toronto, Ontario
March 8, 2023

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, 2022, 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, 2022, 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 represent the underlying transactions and events in a manner that achieves fair presentation.

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 8, 2023

Statement of Financial Position

As at (in thousands of Canadian dollars)

December 31, 2022

December 31, 2021

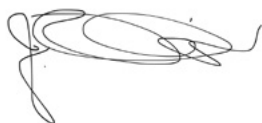
	\$	\$
FINANCIAL ASSETS		
Cash	16,357	60,667
Accounts receivable (Note 3)	73,116	79,989
Long-term investments (Note 4)	70,600	71,972
TOTAL FINANCIAL ASSETS	160,073	212,628
LIABILITIES		
Accounts payable and accrued liabilities (Note 5)	83,569	89,789
Rebates due to market participants (Note 7)	20,639	13,671
Debt (Note 8)	120,000	120,000
Accrued pension liability (Note 9)	11,791	20,689
Accrued liability for employee future benefits other than pension (Note 9)	175,728	162,700
TOTAL LIABILITIES	411,727	406,849
NET DEBT	(251,654)	(194,221)
NON-FINANCIAL ASSETS		
Tangible capital assets (Note 10)	216,914	176,168
Prepaid expenses	14,765	10,005
TOTAL NON-FINANCIAL ASSETS	231,679	186,173
ACCUMULATED DEFICIT		
Accumulated deficit from operations	(25,072)	(25,825)
Accumulated remeasurement gains	5,097	17,777
ACCUMULATED DEFICIT (Note 6)	(19,975)	(8,048)

Commitments (Note 15)

Contingencies (Note 16)

See accompanying notes to financial statements

On behalf of the Board:



Joe Oliver
Chair
Toronto, Ontario



Peter McMullen
Director
Toronto, Ontario

Statement of Operations and Accumulated Deficit

For the year ended December 31 (in thousands of Canadian dollars)	2022	2022	2021
	Budget \$	Actual \$	Actual \$
IESO CORE OPERATIONS			
System fees net of rebates	201,546	192,889	195,029
Other revenue (Note 11)	2,167	8,994	3,288
Interest and investment income	3,296	4,658	4,044
Core operation revenues	207,009	206,541	202,361
Core operation expenses (Note 12)	(207,009)	(201,957)	(191,679)
Core operations surplus	-	4,584	10,682
OTHER GOVERNMENT PROGRAMS			
Government transfer	-	(279)	(858)
Government transfer expenses (Note 12)	-	279	858
Government transfer surplus	-	-	-
SMART METERING ENTITY			
Smart metering charge net of rebates	34,802	23,035	21,881
Smart metering expenses (Note 12)	(31,948)	(26,866)	(27,312)
Smart metering entity surplus/(deficit)	2,854	(3,831)	(5,431)
MARKET SANCTIONS AND PAYMENT ADJUSTMENTS			
Market sanctions and payment adjustments	15,161	11,206	11,843
Customer education and market enforcement expenses (Note 12)	(15,161)	(11,206)	(11,843)
Market sanctions and payment adjustments surplus	-	-	-
SURPLUS	2,854	753	5,251
ACCUMULATED DEFICIT FROM OPERATIONS, BEGINNING OF PERIOD	(25,825)	(25,825)	(31,076)
ACCUMULATED DEFICIT FROM OPERATIONS, END OF PERIOD	(22,971)	(25,072)	(25,825)

See accompanying notes to financial statements

Statement of Remeasurement Gains and Losses

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

	2022	2021
	\$	\$
ACCUMULATED REMEASUREMENT GAINS, BEGINNING OF PERIOD	17,777	14,817
UNREALIZED GAINS/LOSSES ATTRIBUTABLE TO:		
Foreign exchange - other	554	560
Portfolio investments	(12,564)	2,967
AMOUNTS RECLASSIFIED TO THE STATEMENT OF OPERATIONS:		
Foreign exchange - other	(554)	(567)
Portfolio investments	(116)	-
NET REMEASUREMENT (LOSSES)/GAINS FOR THE PERIOD	(12,680)	2,960
ACCUMULATED REMEASUREMENT GAINS, END OF PERIOD	5,097	17,777

See accompanying notes to financial statements

Statement of Change in Net Debt

For the year ended December 31 (in thousands of Canadian dollars)	2022	2022	2021
	Budget \$	Actual \$	Actual \$
SURPLUS	2,854	753	5,251
CHANGE IN NON-FINANCIAL ASSETS			
Acquisition of tangible capital assets	(71,200)	(62,165)	(50,284)
Amortization of tangible capital assets	24,510	21,419	23,929
Change in prepaid expenses	-	(4,760)	(1,310)
TOTAL CHANGE IN NON-FINANCIAL ASSETS	(46,690)	(45,506)	(27,665)
NET REMEASUREMENT (LOSSES)/GAINS FOR THE PERIOD	-	(12,680)	2,960
CHANGE IN NET DEBT	(43,836)	(57,433)	(19,454)
NET DEBT, BEGINNING OF PERIOD	(194,221)	(194,221)	(174,767)
NET DEBT, END OF PERIOD	(238,057)	(251,654)	(194,221)

See accompanying notes to financial statements

Statement of Cash Flows

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

	2022	2021
	\$	\$
OPERATING TRANSACTIONS		
Surplus	753	5,251
Changes in non-cash items:		
Amortization	21,419	23,929
Unrealized foreign exchange (losses) for the period	-	(7)
Pension expense	(8,898)	(4,431)
Other employee future benefits expense	13,028	11,739
Gain on disposal of long-term investments	(116)	-
	25,433	31,230
Changes in non-cash balances related to operations:		
Change in accounts payable and accrued liabilities	(8,667)	(29,482)
Change in accounts receivable	6,873	24,962
Change in rebates due to market participants	6,968	11,212
Change in prepaid expenses	(4,760)	(1,310)
	414	5,382
Cash provided by operating transactions	26,600	41,863
CAPITAL TRANSACTIONS		
Acquisition of tangible capital assets	(62,165)	(50,284)
Change in accounts payable and accrued liabilities related to tangible capital assets	2,447	3,168
Cash applied to capital transactions	(59,718)	(47,116)
INVESTING TRANSACTIONS		
Purchase of long-term investments	(23,492)	(13,435)
Proceeds on sale of long-term investments	12,300	-
Cash applied to investing transactions	(11,192)	(13,435)
DECREASE IN CASH	(44,310)	(18,688)
CASH - BEGINNING OF PERIOD	60,667	79,355
CASH - END OF PERIOD	16,357	60,667

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 cyber security 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 cyber security 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 2022.

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 relate 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, 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 is 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 2022	Estimated Average Service Life 2021
Facilities and leasehold improvements	5 to 50	5 to 50
Market systems and applications	3 to 12	3 to 12
Information technology hardware and other assets	3 to 10	3 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 (2021 - 14.5 years) and other post-employment benefit plan is 17.2 years (2021 - 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 \$32,798 thousand (2021 - \$25,500 thousand) due from the IESO-administered markets that 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 \$69,676 thousand (2021 - \$71,140 thousand). As at December 31, the market value allocation of these long-term investments was 71.8% equity securities and 28.2% debt securities (2021 - 61.9% and 38.1%, 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 \$924 thousand (2021 - \$832 thousand) pertaining to the Retirement Compensation Arrangements Trust (Note 8).

As at December 31 (in thousands of Canadian dollars)	2022	2021
	\$	\$
Opening balance - pooled funds	71,140	54,834
Purchase of investments	23,516	13,339
Proceeds from sale of investments	(12,300)	-
Change in fair value	(12,680)	2,967
Sub-total - Balanced portfolio of pooled funds' closing balance	69,676	71,140
Canada Revenue Agency's Retirement Compensation Arrangements amount	924	832
Total	70,600	71,972

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 2022 or during fiscal 2021.

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, 2022

(in thousands of Canadian dollars)	Level 1	Level 2	Level 3	Total
	\$	\$	\$	\$
Cash Deposits - Canada Revenue Agency	924	-	-	924
TD Emerald Pooled Funds	-	69,676	-	69,676
	924	69,676	-	70,600

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

5. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

As at December 31 (in thousands of Canadian dollars)	2022	2021
	\$	\$
Relating to operations	73,037	81,703
Relating to tangible capital assets	10,532	8,086
Closing balance	83,569	89,789

6. ACCUMULATED DEFICIT

The IESO's regulatory deferral account balance is subject to OEB orders. During 2022, the IESO received a decision and order by the OEB to maintain the regulatory deferral account at a maximum of \$10,000 thousand (2021 - \$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)	2022	2021
	\$	\$
Regulatory deferral account (a)	10,000	8,674
Smart Metering Entity (b)	8,868	12,699
Accumulated market sanctions and payment adjustments (c)	-	-
Remeasurement gains (d)	953	13,633
PSAS transition items (e)	(39,796)	(43,054)
Accumulated deficit - end of year	(19,975)	(8,048)

a) Regulatory Deferral Account - Accumulated Surplus

As at December 31 (in thousands of Canadian dollars)	2022	2021
	\$	\$
Accumulated surplus - beginning of year	8,674	1,250
Core operation revenues (net of rebates)	206,541	202,361
Core operation expenses	(201,957)	(191,679)
Recovery of annual PSAS transition items*	(3,258)	(3,258)
Accumulated surplus - end of year	10,000	8,674

b) Smart Metering Entity Account – Accumulated Surplus

As at December 31 (in thousands of Canadian dollars)	2022	2021
	\$	\$
Accumulated surplus – beginning of year	12,699	18,130
Smart metering charge (net of rebates)	23,035	21,881
Smart metering expenses	(26,866)	(27,312)
Accumulated surplus – end of year	8,868	12,699

c) Market Sanctions and Payment Adjustments – Accumulated Surplus

As at December 31 (in thousands of Canadian dollars)	2022	2021
	\$	\$
Accumulated surplus – beginning of year	-	-
Market sanctions and payment adjustments	11,206	11,843
Customer education and market enforcement expenses	(11,206)	(11,843)
Accumulated surplus – end of year	-	-

d) Remeasurement Gains

As at December 31 (in thousands of Canadian dollars)	2022	2021
	\$	\$
Accumulated remeasurement gains – beginning of year	13,633	10,673
Net remeasurement (losses)/gains	(12,680)	2,960
Accumulated remeasurement gains – end of year	953	13,633

e) PSAS Transition Item – Accumulated Deficit

As at December 31 (in thousands of Canadian dollars)	2022	2021
	\$	\$
Accumulated deficit – beginning of year	(43,054)	(46,312)
Recovery of annual PSAS transition items*	3,258	3,258
Accumulated deficit – end of year	(39,796)	(43,054)

* 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 2022, the IESO recognized \$6,982 thousand (2021 – \$13,671 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, 2022, the rebates due to market participants were \$6,982 thousand (2021 – \$13,671 thousand).

In 2022, the IESO recognized \$13,657 thousand (2021 – \$nil) in rebates due to market participants regarding system fees. The IESO's regulatory deferral account balance is subject to OEB orders. In 2019, the OEB approved an operating reserve balance of \$10,000 thousand and during 2022, the IESO received a decision and order by the OEB to maintain the regulatory deferral account at a similar level (2021 – \$10,000 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, 2022, the note payable to the OEFC was \$120,000 thousand (2021 – \$120,000 thousand). For the year ended December 31, 2022, the interest expense on the note payable was \$1,358 thousand (2021 – \$1,358 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, 2022, the credit facility payable to the OEFC was \$nil (2021 – \$nil). For the year ended December 31, 2022, the interest expense on the credit facility was \$nil (2021 – \$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, 2022, the IESO has provided the Retirement Compensation Arrangements' trustee with a bank letter of credit of \$40,937 thousand (2021 – \$42,357 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 2022, the IESO provided the Workplace Safety and Insurance Board with a bank letter of credit of \$20 thousand (2021 – \$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)	2022 Pension Benefits	2021 Pension Benefits	2022 Other Benefits	2021 Other Benefits
	\$	\$	\$	\$
Accrued benefit obligation	(659,361)	(671,309)	(121,298)	(147,802)
Fair value of plan assets	644,856	720,786	-	-
Funded status as of measurement date	(14,505)	49,477	(121,298)	(147,802)
Employer contribution/other benefit payments after measurement date	5,154	3,603	755	631
Deferred asset loss/(gain)	56,601	(22,361)	-	-
Unamortized actuarial (gain) subject to amortization	(59,041)	(51,408)	(55,185)	(15,529)
Accrued liability recognized in the statement of financial position	(11,791)	(20,689)	(175,728)	(162,700)
Actuarial value of plan assets (as at September 30)	701,457	698,425	-	-

Registered pension plan assets

The one-year actual return on the registered pension plan's assets as at September 30, 2022 was -8.4% per annum (2021 - 11.3% 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:

	2022	2021
	%	%
Canadian equity securities	9.9	10.0
Foreign equity securities	39.1	41.1
Canadian debt securities	27.2	29.4
Global infrastructure	11.6	9.4
Canadian real estate	11.5	9.0
Cash equivalents	0.7	1.1
Forward foreign exchange contracts	0.0	0.0
	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:

	2022 Registered Pension Benefits	2021 Registered Pension Benefits	2022 Supplemental Pension Benefits	2021 Supplemental Pension Benefits	2022 Other Benefits	2021 Other Benefits
	%	%	%	%	%	%
Discount rate at the end of the period	6.00	5.50	4.70	3.40	4.70	3.40
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 4.47% in 2022, grading down to an ultimate rate of 4.05% per year in 2040. Dental costs are assumed to increase by 4.93% per year in 2022, grading down to 4.05% per year in 2040.

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

(in thousands of Canadian dollars)	2022 Pension Benefits	2021 Pension Benefits	2022 Other Benefits	2021 Other Benefits
	\$	\$	\$	\$
Current service cost (employer)	14,347	14,177	7,107	8,931
Interest cost	36,307	34,829	5,220	4,503
Expected return on plan assets	(38,062)	(35,763)	-	-
Amortization of past service cost	-	-	4,460	-
Amortization of net actuarial (gain)/loss	(3,546)	(2,135)	(903)	821
Benefit cost	9,046	11,108	15,884	14,255

(in thousands of Canadian dollars) (as at September 30)	2022 Pension Benefits	2021 Pension Benefits	2022 Other Benefits	2021 Other Benefits
	\$	\$	\$	\$
Employer contribution/other benefit payments	16,393	12,282	2,732	2,499
Plan participants' contributions	10,108	9,278	-	-
Benefits paid	39,267	32,652	2,732	2,499

The most recent actuarial valuation of the IESO registered pension plan for regulatory funding purposes was completed as at January 1, 2022.

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

	2022 Registered Pension Benefits	2021 Registered Pension Benefits	2022 Supplemental Pension Benefits	2021 Supplemental Pension Benefits	2022 Other Benefits	2021 Other Benefits
	%	%	%	%	%	%
Discount rate at the beginning 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

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, 2021	Additions	Disposals	As at December 31, 2022
	\$	\$	\$	\$
Facilities and leasehold improvements	54,501	1,225	-	55,726
Market systems and applications	321,544	10,535	(64,867)	267,212
Information technology hardware and other assets	44,939	3,876	(7,471)	41,344
Meter data management/repository	21,735	-	-	21,735
Total cost	442,719	15,636	(72,338)	386,017

Accumulated Amortization

(in thousands of Canadian dollars)	As at December 31, 2021	Amortization Expense	Disposals	As at December 31, 2022
	\$	\$	\$	\$
Facilities and leasehold improvements	(28,262)	(1,387)	-	(29,649)
Market systems and applications	(293,501)	(11,834)	64,867	(240,468)
Information technology hardware and other assets	(32,751)	(4,367)	7,471	(29,647)
Meter data management/repository	(12,382)	(3,831)	-	(16,213)
Total accumulated amortization	(366,896)	(21,419)	72,338	(315,977)

Net Book Value

(in thousands of Canadian dollars)	As at December 31, 2021	As at December 31, 2022
	\$	\$
Facilities and leasehold improvements	26,239	26,077
Market systems and applications	28,043	26,744
Information technology hardware and other assets	12,188	11,697
Meter data management/repository	9,353	5,522
Total net book value	75,823	70,040
Assets under construction	100,345	146,874
Net tangible capital assets	176,168	216,914

In 2022, there were four adjustments to remaining asset service lives in Information Technology hardware and other assets. There was also a write-down of \$609 thousand in 2022 of an asset under the Market systems and applications category. Interest capitalized to assets under construction during 2022 was \$1,325 thousand (2021 - \$895 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 \$7,866 thousand in 2022 (2021 - \$1,792 thousand).

The IESO also recognized application fees of \$832 thousand in 2022 (2021 - \$14 thousand) and program revenue of \$296 thousand (2021 - \$1,482 thousand).

12. EXPENSES BY OBJECT

Expenses by object for 2022 comprise the following:

(in thousands of Canadian dollars)	Core Operations 2022	Other Government Programs 2022	Smart Metering Entity 2022	Market Sanctions & Payment Adjustments 2022	Total 2022
	\$	\$	\$	\$	\$
Compensation and benefits	133,834	213	4,087	7,633	145,767
Professional and consulting	23,663	213	13,207	1,113	38,196
Operating and administration	37,002	75	5,741	2,460	45,278
Amortization	17,588	-	3,831	-	21,419
Interest	160	-	-	-	160
Foreign exchange gain	112	-	-	-	112
Contract cancellation costs (Note 13 (e))	-	(780)	-	-	(780)
Less: Recoveries	(10,402)	-	-	-	(10,402)
Total Expenses	201,957	(279)	26,866	11,206	239,750

Expenses by object for 2021 comprise 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

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), Ministry of Energy, and Ministry of the Environment, Conservation and Parks 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 2022 for the note payable were \$1,358 thousand (2021 – \$1,358 thousand) and for the credit facility were \$nil (2021 – \$nil). As of December 31, 2022, the IESO had an accrued interest payable balance with the OEFC of \$nil (2021 – \$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 \$1,882 thousand in 2022 (2021 – \$1,744 thousand). As of December 31, 2022, the IESO had a receivable balance with the OEB of \$nil (2021 – \$93 thousand).

c) The IESO performed connection and bulk electric system impact assessments for Hydro One in 2022, and invoiced Hydro One \$150 thousand (2021 – \$509 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 2022, the IESO incurred costs of \$219 thousand (2021 – \$99 thousand) for these services and as of December 31, 2022, had a net receivable balance with Hydro One of \$39 thousand (2021 – \$44 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 2022, OPG was invoiced \$57 thousand (2021 – \$172 thousand) and as of December 31, 2022, the IESO had a receivable balance with OPG of \$31 thousand (2021 – \$44 thousand).

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 2022, under these agreements, the IESO re-estimated the accrued amount from the Minister of Energy by \$279 thousand (2021 – accrued \$465 thousand) and as of December 31, 2022 the IESO had a net receivable balance with the Minister of Energy of \$36,219 thousand (2021 – \$50,644 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. The IESO may occasionally 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, 2022 (2021 - \$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 \$765 thousand as at December 31, 2022 (2021 - \$1,138 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, 2022, would have resulted in a change for the year of approximately \$15,016 thousand (2021 - \$13,212 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, 2022 included no material items past due and substantially all of the balance is expected to be collected within 60 days from December 31, 2022. 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)

	\$
2023	7,177
2024	7,015
2025	4,967
2026	38
2027 and thereafter	-
Total	19,197

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.

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 of Directors 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 at least eight and no more than 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 2022.

The comparator group to benchmark the executive jobs 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. The IESO's Human Resources 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 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 Board 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 2022, the Board assessed the corporate results and determined that overall the IESO substantially achieved expectations for the measures and targets specified. In addition to the corporate measures, each executive had an individual set of measures and targets aligned with the corporate performance objectives and the 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 2022 Summary Compensation Table details the annual compensation for the year ended December 31, 2022 for the executives listed. Note: the figures reported as 2022 "Salary Paid" in the 2022 Public Sector Salary Disclosure for the executives include the 2022 earned variable compensation, and deferred benefits such as 2022 vacation.

2022 Summary Executive Compensation Table

Name and Position	Base Salary (2022 earnings)	Variable Pay Awarded	Other Annual Compensation ¹	Total Cash Compensation ²
	\$	\$	\$	\$
Lesley Gallinger President and CEO	630,000	52,794	10,394	693,189
Barbara Anderson VP, Corporate Services and CFO	295,000	23,609	0.32	318,609
Alex Foord VP, Information and Technology Services and CIO	318,000	25,449	11,250	354,699
Carla Nell VP, Corporate Relations, Stakeholder Engagement and Innovation	305,000	25,176	746	330,922
Robin Riddell VP, Human Resources	275,000	23,460	14,345	312,806

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)

* As of December 31, 2022

2022 Summary Board of Directors Compensation Table

Name	Title	Appointment Date	Current Term Expiry	2022 Remuneration (no expenses)
				\$
Joe Oliver	Board Chair	March 26, 2019	March 25, 2023	110,900
Patricia Koval	Board Vice-Chair	June 18, 2019	June 17, 2023	53,580
Steve Baker	Markets Committee Chair	June 18, 2019	June 17, 2023	61,300
David Sinclair	Audit Committee Chair	Sept. 20, 2019	Sept. 19, 2023	47,900
Simon Chapelle	Human Resources and Governance Committee Chair	March 28, 2019	March 27, 2023	51,350
Peter McMullen	Director	April 28, 2021	May 1, 2023	44,950
Lisa Pearson	Director	April 28, 2021	May 1, 2023	41,850
Robert Wong	Director	Dec. 15, 2021	Dec. 14, 2023	48,949
Michael Bernstein	Director	June 18, 2019	June 17, 2023	50,300
Tabatha Bull	Director	Oct. 23, 2020	Oct. 23, 2022	30,162

Lesley Gallinger, President and CEO of the IESO, also sits as a Board member

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

Executive Leadership Team

Lesley Gallinger
President and 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

Michael Lyle
Vice-President, Legal Resources
and Corporate Governance

Glenn McDonald
Vice-President, Market
Assessment and Compliance

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

Robby Sohi
Chief Operating Officer
and Vice-President,
Markets and Reliability

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*

Patricia Koval
Vice-Chair of the Board
*Former adjunct professor, University of
Toronto; retired senior partner, Torys LLP*

Steve Baker
Markets Committee Chair
*President, Rondeau Energy Consulting Inc
Former president of Union Gas, Enbridge*

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

Simon Chapelle
Human Resources and Governance
Committee Chair
*Corporate Director, The Chapelle Group;
Kingston City Councillor*

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

Lesley Gallinger
*President and CEO, Independent
Electricity System Operator*

Peter McMullen
Director
*Proprietor, Peter L. McMullen
Professional Corporation*

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

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

* As of December 31, 2022

Stakeholder Advisory Committee*

James Scongack (Chair)

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

Brandy Giannetta (Vice-Chair)

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

Nicolas Bossé

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

David Butters

President and CEO
Association of Power
Producers of Ontario
Representing: Generators

Michael Di Lullo

Chief Administrative Officer
Municipality of Middlesex Centre
Representing: Ontario Communities

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 and Stakeholder Relations
BOMA Canada
Representing: Consumers

Paul Grod

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

Jim Hogan

President and CEO
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 CEO
Greater Sudbury Utilities
*Representing: Distributors
and Transmitters*

Amanda Klein

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

Tonja Leach

Executive Director
QUEST Canada
Representing: Ontario Communities

Michael Lyle

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

Scott McFadden

Former Mayor, Township
of Cavan Monaghan
Representing: Ontario Communities

Carla Y. Nell

Vice-President, Corporate
Relations, Stakeholder
Engagement and Innovation
Independent Electricity
System Operator
Representing: the IESO

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

* As of December 31, 2022

Technical Panel*

Michael Lyle (Chair)

Vice-President, Legal Resources
and Corporate Governance
Independent Electricity
System Operator
Representing: the 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 North America
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

Director of Strategic Initiatives
Seguin Township
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: the IESO

Vlad Urukov

Director, Regulatory Research
and Analytics
Ontario Power Generation
*Representing: Market
Participant Generators*

Technical Panel Secretariat*

Agatha Pyrka

Senior Advisor, Internal
Engagement, Market Renewal
Independent Electricity
System Operator

* As of December 31, 2022

Independent Electricity

System Operator

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