
Ontario Distribution Sector Cost Mitigation & Sector Modernization Policy Options

December 2, 2016

Overview

- This deck presents options to deliver distribution sector cost reductions and efficiencies to consumers.
- Overall, it is recommended that options to reduce costs to consumers focus on both **incenting LDC performance improvements** and **encouraging sector innovation/improved customer choice**.
- This can enable a sustainable evolution of the distribution sector to one that provides better value for money and choice to customers, while still realizing opportunities to reduce costs in the near-term.
- Options presented in this context align with the vision for the distribution sector as outlined in the Minister's speech on November 28th.
 - *"New entrants and competitive tension ought to be encouraged and rewarded, not stifled or excluded...Innovation must be incentivized and new regulatory mechanisms considered – but at no point can we ignore the care and protection of consumers."* – Minister of Energy, November 28th.
- All options noted in this deck have important implementation considerations, and their impacts are dependent on decisions made on related options. This deck highlights these considerations and next steps for determining which options to pursue, with a target of inclusion in the 2017 LTEP and associated OEB implementation directive.

Ministry Policy Objectives & Identified Options

- In identifying options to realize distribution sector cost reductions and performance improvements for customers, it is important to identify the Ministry's policy objectives for the sector as a whole. A review of the Ministry's historic approach to distribution sector issues reveals three broadly consistent policy objectives:
 - 1. Delivering high-performing, cost-effective electricity distribution service to the benefit and protection of customers.**
 - 2. Ensuring the distribution sector and system infrastructure are not barriers to customers realizing value from new technologies and business models.**
 - 3. Leveraging the LDC-customer relationship to effectively deliver critical provincial policies and programs.**
- These objectives remain valid as the Ministry seeks improvement. While the Ministry's historic approach of economic regulation through the OEB supplemented with broader policy direction has yielded significant progress and leadership, overall sector performance is trending downwards for two identified reasons:
 - The regulatory framework has not subjected LDCs to significant performance expectations/requirements, which in some cases may have resulted in misalignment between the LDCs financial interest and the customer interest. LDCs are also mandated to allocate resources to non-core business activities.
 - LDC and broader sector participants have been limited in terms of available financial and regulatory tools that could make operational improvements and business model innovation possible.
- The OEB, through the Renewed Regulatory Framework for Energy (RRFE), has since 2012 attempted to move the distribution sector towards a performance/outcomes-based regulatory framework. While new reporting requirements such as the LDC performance scorecard are positive developments, RRFE does not tie these system performance expectations to LDC financial performance.

Cost Reductions Through Performance Incentives

Option	Description	Potential Cost Impacts*	Timeline**	Notes
Performance Standards with Rewards & Penalties	Strengthen LDC scorecard by connecting to LDC financial performance through earnings sharing or penalties paid to consumers. Ex: SAIDI/SAIFI; OM&A per customer	1-2% of revenue requirement could be recycled back to customers. - Performance penalties would be real, periodic on-bill \$ reductions. - Cost reduction would only occur if standards are not met.	1 year	UK Regulator Ofgem requires utilities to pay consumers up to £50 if reliability standards are not met.
Enhanced Economic Regulation	Revise rate-setting to reflect tightening productivity requirements and capital cost avoidance.	<1% reduction in rates annually, with additional capital investment avoidance. - Methods include stronger productivity factors, broader peer comparisons, and elimination of ICM.	1-3 years	Incentivizes innovation by requiring LDCs to provide equal or better service on less inflation-adjusted revenue annually.
LDC Collaboration Incentives	Create regulatory incentives for LDCs to pursue efficiencies and service sharing agreements.	- Potential to avoid individual LDC capital investments of up to six figures, plus additional OM&A tightening. - Actual level of rate reduction dependent on specific LDC proposals.	1 year for new guidelines, savings to be realized through LDC planning process.	LDCs have already indicated an interest in pursuing such arrangements but have expressed concern on regulatory barriers and costs.
Line Loss Accountability	Create appropriate benefit-sharing mechanism so LDCs are incentivized to pursue line loss reductions.	- Potential for 1-3% reduction in commodity charges associated with losses. - Requirements dependent on business cases so costs don't outweigh benefits.	1-2 years	Potential linkages with related proposal for in-front of the meter conservation.

*Dependent on implementation specifics as determined by OEB

Considerations

Sector Considerations

- Exact bill reduction levels are unknown, but real OM&A and some capital cost avoidance can reasonably be expected.
- Could indirectly incent consolidation if LDCs feel they are unable to adequately manage their assets in light of tightening requirements.
- Any initiatives that have a direct impact on LDC profitability could affect the value of Hydro One.
- There is a tension between requiring productivity enhancements and creating firm performance standards. LDCs have to invest to maintain system levels, but also finding cost efficiencies, which is an incentive for innovation (see next slide). The OEB would need to ensure service levels are not threatened during this transition.

Regulatory Considerations

- The OEB is the electricity distribution sector's independent regulator and as such is responsible for establishing rate-setting mechanisms in line with its statutory objectives.
 - The Ministry would engage with OEB to align on approach, and provide only high-level direction so as to respect OEB's role in determining implementation specifics.
 - The OEB would likely need to conduct policy hearings and stakeholder consultations on these initiatives, though Ministry could request new rules be in place for next major LDC rate cycle.
- LDCs are resistant to peer comparison for a variety of historical and service territory issues. OEB econometric analysis has generally supported limiting peer comparisons. As comparisons would be an important component of benchmarking performance standards, the Ministry may experience sector pushback.
- Updating rate-setting mechanisms and regulatory processes could create regulatory uncertainty and limit LDC activity. The OEB has revised its processes multiple times over the past 15 years.
 - An additional cost reduction measure that could limit negative impacts of regulatory uncertainty would be to move all or portions of OEB costs and/or LDC regulatory costs onto the tax base.

Potential LDC Implementation Measures

- This tension of incentives can lead LDCs to pursue innovative (including unregulated) approaches, and potentially opens the door to the emergence of new privately-financed energy services. Modernization will be required to meet performance expectations.
- A modern grid embeds an Information and Community Technology (ICT) / Advanced Software platform into the normal operations of the utility. This enables rapid collection, interpretation, and analysis of performance data and uses it to make better planning decisions.
- Examples:
 - Capital Cost Avoidance – automated switch gears at transformers to reduce burden on assets; smart home technologies to reduce demand; smart integration of distributed generation; utility dispatch control of EV charging activities.
 - Customer Service Performance – automated voltage controls to improve power quality; advanced fault detection; optimization of DER to support power quality / reliability.
 - Line Loss – portable and quick-install sensors to identify technical and non-technical losses; volt/VAR controls to reduce voltage levels and save power.
 - Customer Control – enable new business models to integrate customer technologies and cost-share where there are co-benefits (e.g. Power.House project); dynamic pricing models using smart home energy management and two-way communication smart meters.
- The utility business culture is risk averse as a result of market and regulatory constraints, lack of pressures / incentives to innovate, and a rate-setting mechanism that favours traditional investments (e.g. poles and wires) over less conventional solutions (e.g. advanced software analytics).
- However, utilities should not innovate for the sake of innovation – **the business case is critical to ensure cost reduction and improved performance.**
- LDCs will be asked to do more with less, and that will spur innovation. However, they need the space to innovate, and there are several regulatory barriers (e.g. recovery for line loss; strict limits on LDC business activity; rate recovery for OPEX v. CAPEX; no accounting process for joint-investments / diffuse benefits).
 - An LTEP Implementation Directive outlining regulatory change will need sufficient specificity to establish clear policy objectives and expected outcomes.
 - Direction to the IESO may also be required if there are any market barriers to enabling innovation. Market renewal may be a mechanism to ensure the right competitive models are in place to enable cost-effective innovation and optimization of assets.

Next Steps

- Return with more in-depth impact and implementation analysis on specific options identified as of-interest.
- Revise understanding of pros/cons of identified options based on stakeholder feedback from LTEP consultations.
 - Stakeholders have been raising similar ideas in roundtable sessions.
- Work with OEB to align on approach and respect OEB role as independent regulator.
 - OEB Mandate Review, scheduled to begin in January, can consider OEB expertise and capacity to deliver on new approaches.
- Convene LDC working group to test understanding and impacts of identified options.
- Incorporate final recommendations into LTEP and subsequent OEB Directive.

Appendix A

Distribution Sector Cost & Performance Trends

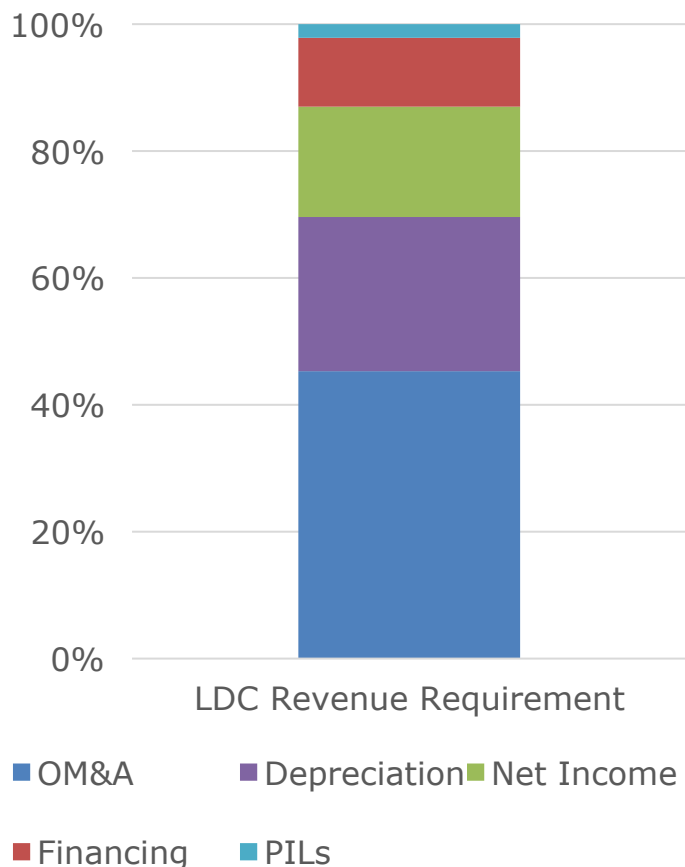
Distribution Sector Cost & Performance Trends

- Like other components of Ontario's electricity system, distribution sector costs have risen as investments have been made to update and modernize system infrastructure.
 - Overall distribution sector revenues collected from customers have risen from \$577.66 per customer annually in 2006 to \$703.36 per customer annually in 2015 (21.8% increase).
 - For the typical residential customer* (750kwh/month), monthly distribution costs have risen from \$24.49 in 2006 to \$30.75 in 2016. Distribution costs represent 23% of the total average pre-tax residential bill.
- Over the same time period, distribution sector productivity and cost efficiency have decreased. This trend raises concern that customers are not realizing a net benefit from sector cost increases, as customers receive less value from the distribution portion of their bill.
 - OM&A costs per customer have increased on average from \$235 in 2006 to \$319 in 2015.
 - For the period 2002-2012, sector productivity has decreased by an annual average of -0.93% when including Hydro One and Toronto Hydro, the worst performers.
 - When compared to other utility services and neighbouring jurisdictional studies, Ontario's electricity distribution sector is the only one to realize a negative productivity rate. On an individual basis some smaller LDCs have positive productivity performance.
- Over this time period, LDC consolidation has been the driving force behind sector restructuring and the search for efficiencies. However, the historical consolidation process has not appeared to deliver cost savings/efficiencies for consumers.
 - Customers of LDCs acquired by Hydro One in the first wave of consolidation (1999-2003) have seen distribution costs rise by up to 268% (Arkona, Ontario) when comparing 2006 rates to 2016.
- Policy direction on investments, including smart meters, have also contributed to increasing sector cost inefficiency while driving broader system and social benefits.

*Simple average of monthly 750 kWh distribution bill, exclusive of taxes using OEB rates database, including H1 residential classes, but excluding 88 acquired LDCs.

LDC Revenue Breakdown

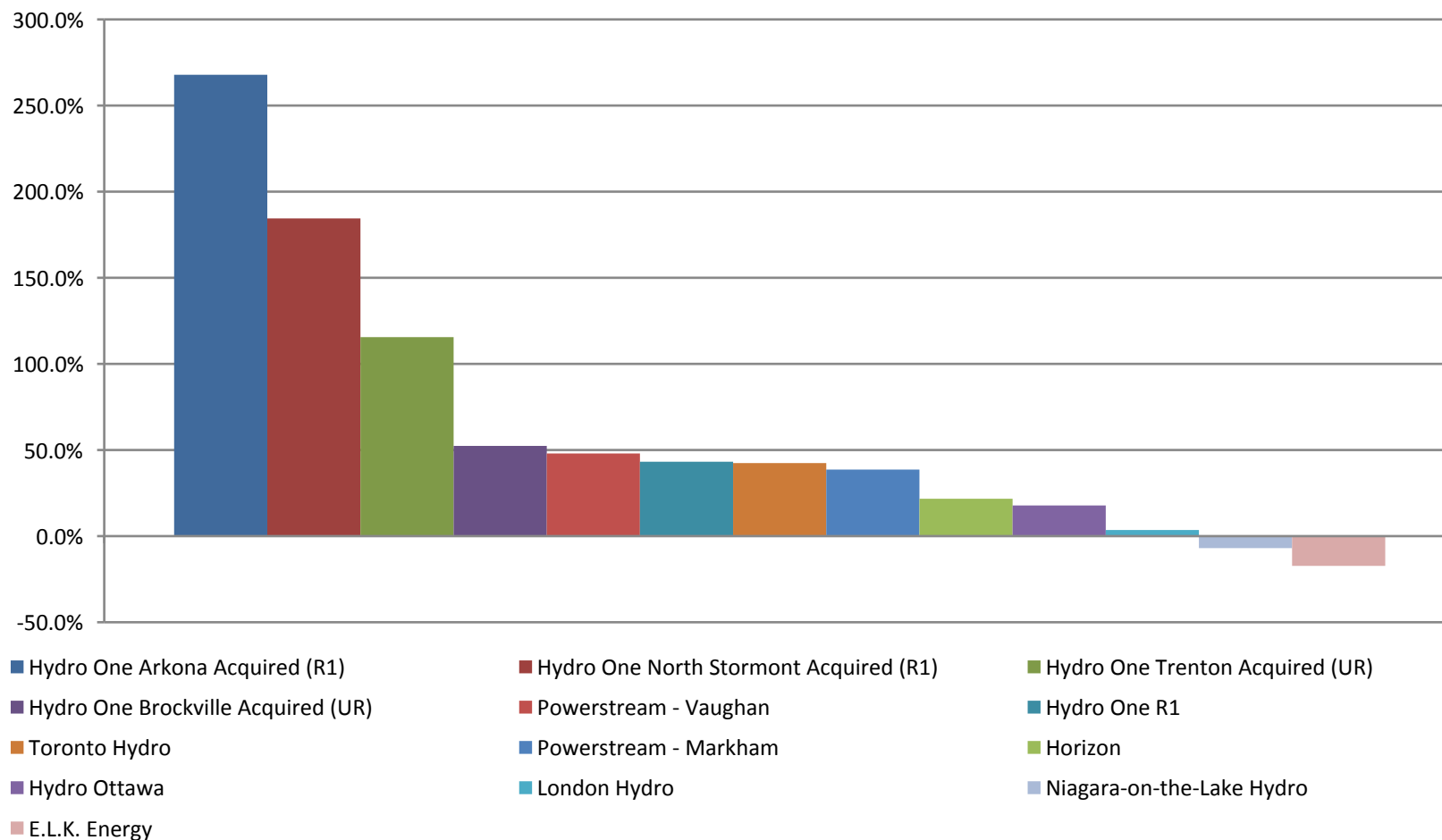
Sector LDC Revenue Components (2015)



- While there is considerable variation in this breakdown, on average LDC revenue components can be explained as follows:
 - OM&A (46%):** Includes system operation & maintenance, customer service, billing/collections, regulatory expenses, salaries.
 - Depreciation (24%):** Reflects accounting treatment of investments in system infrastructure (property, plant and equipment) and other assets. In proposing new investment, LDCs must justify the need and usefulness to the OEB.
 - Net Income (17%):** Reflects income after PILs/taxes.
 - Financing (11%):** Reflects interest expense.
 - PILs or income tax (2%):** PILs expense or income tax expense for privately owned utilities.
- These costs do not include costs associated with operating unregulated affiliates. Any OM&A service costs shared between LDC and affiliate are prorated for inclusion in the ratebase.

Selected Residential Bill Distribution Bill Changes (2006-2016)

750kWh/month



- Over this time period, typical distribution costs have risen 25.5%, compared to 78.1% for commodity costs

Annual Average Total Factor Productivity (TFP) Growth Selected LDCs: 2002-2012

LDC	Annual Average TFP (%)
Halton Hills Hydro	3.57%
Milton Hydro	2.65%
Hydro One Brampton	1.92%
Co-Op Embrun	1.35%
Peterborough Distribution	0.44%
Enersource	-0.02%
Powerstream	-0.92%
Hydro Ottawa	-1.07%
Hydro One	-1.60%
Toronto Hydro	-1.66%

- Overall sector TFP growth, including Hydro One and Toronto Hydro: **-0.92%**
- Excluding Hydro One and Toronto Hydro: **-0.33%**

Source: PEG version 2 working papers – Part II, 2012 update, filed May 24, 2013 in EB-2010-0379 (RRFE). Worksheet manipulated by ENERGY staff to obtain result.

¹This is reported in PEG Empirical Research in Support of Incentive Rate-Setting: 2012 Update, Report to the Ontario Energy Board September 2013, and is referred to in the Report of the Board (EB-2010-0379 as corrected on Dec. 4, 2013).

Previously Considered Cost Mitigation Options

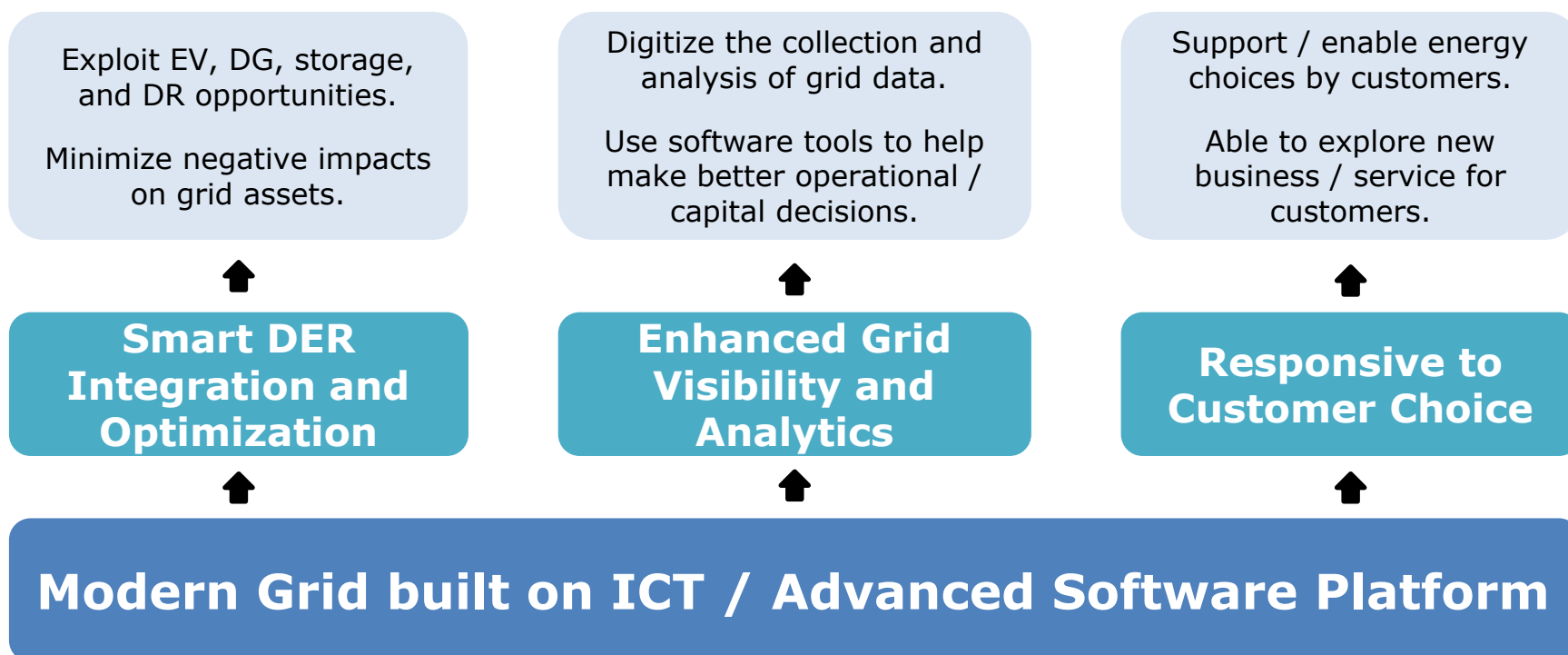
- The Ministry has considered distribution sector cost reduction options in the past which stemmed from determinations that certain aspects of the sector status quo were not appropriate or in the public interest.
- Ministry staff recommend not pursuing these options due to their contentious nature and the availability of more comprehensive solutions that can drive both cost reductions and system performance improvements.
 1. **Direct Consolidation Policy:** The Ministry could mandate LDC consolidation or provide additional incentives for voluntary consolidation in an attempt to reduce OM&A costs, leading to rate reductions for consumers.
 - Historical analysis reveals that, in general, consolidation has not led to the expected efficiency gains or cost reductions for affected customers. Hydro One, which has led the bulk of consolidation activity, is recognized by the OEB as one of the most inefficient LDC in the province. Without appropriate regulatory incentives, consolidation transactions may not result in OM&A reductions to the benefit of customers.
 2. **ROE Reduction:** The Ministry could instruct the OEB to review its ROE policy in light of LDCs monopoly position and fixed distribution rates.
 - ROE is an established requirement of utility regulation and has been upheld by judicial review. Attempts to reduce ROE could be challenged in court. As well, as ROE is used by municipal shareholders to fund municipal services, this could lead to broader communication and stakeholder management issues.
 3. **Payments-in-Lieu of Taxes Policy:** The Ministry of Finance could restructure or eliminate the PILs regime to reduce the tax burden on LDCs, which would lead to cost savings for ratepayers.
 - PILs are a vital component of OEFC's debt retirement outlook. With the departure of Hydro One from the PILs regime and the ending of the debt retirement charge on residential bills, restructuring the PILs regime would impact OEFC's ability to service the debt and could impact Ontario's credit outlook.
- Performance-based options have the potential to indirectly incent consolidation (in a manner that returns benefits to consumers) and potentially reduce ROE in an equitable manner in the event performance expectations are not met.

Appendix B

Grid Modernization Opportunities

Defining the Modern Grid

- Focus on the “platform” concept – much greater focus on ICT / advanced metering infrastructure (AMI) / software analytics.
- These solutions should be distinguished from DER technologies (EVs, storage, microgrids), which only become smart when the core smart grid solutions based on ICT / AMI / software platforms are also deployed.



High Potential Value Smart Grid Technologies

- ICT / software systems (self-healing, fault protection, DER control, AMI, voltage control) are the core smart grid technologies with the highest potential value for investment.