

Sustainability-Linked Bond Framework

Instituto Costarricense de Electricidad (ICE)

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Abbreviations

AMI	Advanced Metering Infrastructure
ANSI	American National Standard for Electricity Meters
ARESEP	<i>Autoridad Reguladora de los Servicios Públicos</i>
CNFL	<i>Compañía Nacional de Fuerza y Luz</i>
ICE	<i>Instituto Costarricense de Electricidad</i>
ICMA	International Capital Market Association
IOT	Internet of Things
KPIs	Key Performance Indicators
LMA	Loan Market Association
NDCs	Nationally Determined Contributions
RACSA	<i>Radiográfica Costarricense S.A.</i>
SLBs	Sustainability Linked Bonds
SLBP	Sustainability-Linked Bond Principles
SLLs	Sustainability-Linked Loans
SLLP	Sustainability-Linked Loan Principles
SPTs	Sustainability Performance Targets
UTE	<i>Administración Nacional de Usinas y Trasmisiones Eléctricas</i>

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Introduction

1.1 Business Overview

Instituto Costarricense de Electricidad (“ICE” or the “Company”) is an autonomous government-owned electricity and telecommunications service provider in Costa Rica. ICE is the parent entity (approximately 90% of the company’s assets) of its subsidiaries *Compañía Nacional de Fuerza y Luz* (CNFL), *Radiográfica Costarricense S.A.* (RACSA), and *Gestión Cobro S.A.*¹ ICE and its subsidiaries are referred to as Grupo ICE.²

ICE is a national and regional leader in the electricity and telecommunications markets, providing world-class technology and customer service to its clients. Within its electricity business, ICE provides electricity generation, transmission, and distribution services. It’s subsidiary, CNFL also provides electricity distribution services. ICE and CNFL cover different concession areas for electricity distribution with independent characteristics. The concession zones of the different electricity distribution companies in Costa Rica (see Figure 1) are regulated by the local electricity regulator, *Autoridad Reguladora de los Servicios Públicos* (ARESEP).

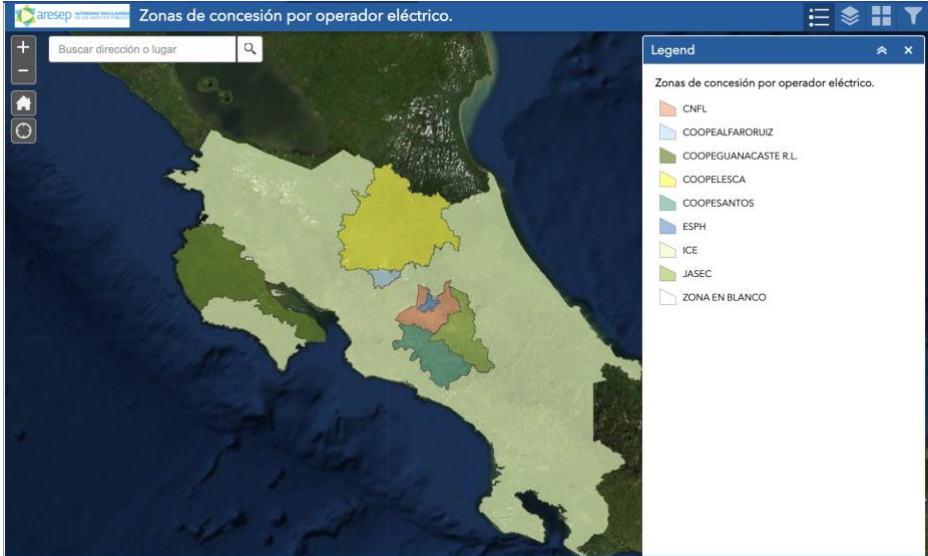


Figure 1. Concession Areas for Electricity Distribution in Costa Rica³

¹ ICE owns 98.6% of CNFL, 100% of RACSA, and 100% of Gestión de Cobro S.A.

² ICE (2021). ¿Quiénes somos? [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/quienessomos/quienes-somos/historia>

³ ARESEP (2021). Zonas de concesión por operador eléctrico. [Online]. Available at: <https://aresep.go.cr/transparencia/datos-abiertos/zonas-concesion-operador-electrico>

ICE contributes to the economic, social, and environmental development of Costa Rica by promoting the universality of its services and the sustainable management of its natural resources. For over seven decades, the Company has led the creation, expansion, and ongoing transformation of one of the most sustainable electricity systems worldwide. ICE is the largest producer of electricity in the country, representing 64% of total electricity generation in 2020.⁴ Since its foundation on April 8th, 1949 (Decree Law N°. 449⁵), ICE has the legal responsibility of maintaining the quality, reliability, and safety of the electricity supply in Costa Rica.⁶ In the past 70 years, Costa Rica went from 14% of its citizens with access to electricity, to almost universal access today (over 99%).⁷ Additionally, the country's electricity grid has become a global reference on clean energy, given its high percentage of generation from renewable sources (hydropower, geothermal, and wind). Since 2015, Costa Rica has produced more than 98% of its energy with renewable sources, the majority through hydropower.⁸

Given ICE's success in electrifying the country, on October 28th, 1963, the Law No. 3226 was enacted, which entrusted ICE with supplying the country's telephone, telegraphic, radiotelephone, and radiotelegraphic communications services.⁹ The Company's Telecommunication Business assumes the responsibility of expanding access to connectivity for all inhabitants, industries, and businesses. ICE is also the dominant operator in the cellular market, with its Kölbi brand, and has a robust network of fiber optics and submarine cables that allow high-quality connectivity with the rest of the world.

Based on its historical role in the development of Costa Rica's electricity and telecommunications sector, along with the awareness of its challenges, ICE has set out to transcend borders, discover new clients, and seek new lines of business to strengthen its current offer. Within the context of globalization and the Fourth Industrial Revolution, ICE is promoting solutions oriented towards: digital transformation, decarbonization of the economy, smart cities, renewable energies, convergence, collaborative innovation, and consulting. These aims are encompassed within ICE's institutional strategy, which

⁴ ICE (2020). *Generación y Demanda Informe Anual 2020*. <https://apps.grupoice.com/CenceWeb/>

⁵ Poder Legislativo (1949). *Ley N° 449: Ley de Creación del Instituto Costarricense de Electricidad (ICE)*. [Online]. Available at: <https://www.grupoice.com/wps/wcm/connect/862fde95-11f4-419a-8363-602a5a51f02a/Ley+449.pdf?MOD=AJPERES&CVID=mLD9ZiF>

⁶ ICE represents 64.43% of the gross electricity production of Costa Rica.

⁷ Gerencia de Electricidad ICE (2019). *Acciones de Sostenibilidad Social y Ambiental*. [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>

⁸ ICE (2019). *Memoria Anual*. [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/quienessomos/gobierno-corporativo/memorias>

⁹ Poder Legislativo (1963). *Ley 3226 de 28 de octubre de 1963*. [Online]. Available at: [https://www.palermo.edu/cele/pdf/Regulaciones/CostaRicaLey3226decreaciondelICE-TELECOMUNICACIONES\(1963\).pdf](https://www.palermo.edu/cele/pdf/Regulaciones/CostaRicaLey3226decreaciondelICE-TELECOMUNICACIONES(1963).pdf)

was formalized on May 10th, 2019, with the publication of the Strategy 4.0 (2019 – 2023).¹⁰

1.2 ICE's Strategy 4.0

For over seven decades, ICE has played a leading role in the sustainable development of Costa Rica, providing universal access to electricity and telecommunications services throughout the national territory, while maintaining rational use of its natural resources.

ICE's institutional strategy focuses on the promotion of its mission, vision, and values through innovative initiatives that seek to promote sustainability, resilience, and transformation. Today, ICE is guided by its **Strategy 4.0**, which defines the roadmap for ICE and its companies between 2019 and 2023, towards digital transformation and smart cities, decarbonization of the economy, innovative technological alternatives in electricity and telecommunications services, among others. The strategy focuses its efforts on five strategic objectives:

1. **Stabilization and financial sustainability:** Achieve the financial health of ICE through the optimization of resources and the addition of economic and public value to society.
2. **Evolution of business and customer experience:** Strengthen and renovate corporate value proposition, through convergent and innovative offers, driven by digital transformation, shared economy, disintermediation, and open innovation.
3. **Operational efficiency, modernization, and digital transformation:** Optimization of key business and support processes, reduce costs, and achieve greater staff efficiency to achieve greater agility and less time to market.
4. **Effectiveness of human talent:** Strengthen intellectual capital of all participants in the organization for the survival of the business in the long term.
5. **Equity and sustainability:** Organization, articulation and understanding that allow adopting and taking advantage of the practice of equity and sustainability as a source of competitive advantage.¹¹

1.3 Sustainability at ICE

Since ICE's foundation, the pillar of equity and sustainability has been immersed as a decisive element in each of the activities, works, and projects that the company has planned and developed. ICE's environmental and social standards have been recognized

¹⁰ ICE (2019). *Estrategia 4.0*. [Online]. Available at:

<https://www.grupoice.com/wps/portal/ICE/quienessomos/gobierno-corporativo/estrategia-corporativa>

¹¹ ICE (2019). *Estrategia 4.0*. [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/quienessomos/gobierno-corporativo/estrategia-corporativa>

in recent years by multilateral development banks, international organizations, and non-governmental organizations, placing ICE as one of the best Executing Agencies in the application of environmental and social policies and safeguards.¹²

1.3.1 Policies and Strategic Objectives

ICE's **Sustainability Policy** seeks to ensure that ICE and its companies manage sustainability in all their activities to improve the quality of life for their clients, workers, and society through research, innovation, transparency, and accountability; seeking to holistically advance between human development, the environment, prosperity, justice, and social responsibility, without compromising the quality of life of future generations.¹³

Regarding ICE's **Electricity Business**, environmental and social responsibility is based on six fundamental issues: (1) environmental management, (2) biodiversity, (3) climate change (4) equity and human rights, (5) labor practices and decent work, and (6) land management (see Table 1).¹⁴ The Management of the Electricity Business (*Gerencia de Electricidad, "GE"*), defined for the period 2019-2023 a series of tactical objectives contribute to their material issues, which include:

- Implement the environmental and social sustainability model for the Electricity Business.
- Strengthen the principle of accessibility to the electricity service of the citizens of the country in observance of the values of ICE and its companies.
- Quantify the uncertainty of the current and future portfolio of renewable sources of electricity.
- Implement good health and safety practices at work in the Electricity Business processes.
- Strengthen the strategic competencies of the personnel through training in leadership, new business management and operational efficiency, and
- Develop the innovation management process in Electricity Management.¹⁵

ICE encourages the creation of value by implementing a comprehensive sustainability model based on sustainable development objectives and internationally recognized management and reporting practices. Actions regarding environmental and social

¹² Gerencia de Electricidad, ICE (2019). *Acciones de Sostenibilidad Social y Ambiental*. [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>

¹³ Dirección Gestión de Políticas. (April,14 2018). *Política de Sostenibilidad del Grupo ICE*. 79.00.001.201.MC. San Jose: Grupo ICE.

¹⁴ Gerencia de Electricidad, ICE (2019). *Acciones de Sostenibilidad Social y Ambiental*. [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>

¹⁵ ICE (2021). *Modelo de Gestión de la Sostenibilidad (Ambiental y Social) Gerencia de Electricidad*.

sustainability are based on the following **fundamental and material** issues that were defined by ICE as priority issues to ensure continued environmental and social responsibility, which are presented in Table 1.

Table 1. ICE’s Material Issues

Subject	Material Issue
Environmental management	Comprehensive waste management
	Sustainable use of resources
Biodiversity	Natural capital management
Climate change	Resilience and adaptation
	Decarbonization and mitigation
Human rights and non-discrimination	Attention of complaints and claims
	Equality and equity
Labor practices and decent work	Health and Safety at Work
	Human development and training
Land Management	Relationship with the community and interest groups
	Promotion of local development

From the social standpoint, ICE has taken strong actions to promote **gender equality** and human rights. In 2003, the Board of Directors approved the Institutional Policy on Gender Equality and Equity¹⁶ and in 2019, the Corporate Policy on Human Rights was approved.¹⁷ The purpose of this policy is to consolidate an inclusive and egalitarian corporate culture, respectful of human rights, in order to eradicate all forms of discrimination for any reason within the activities and operations carried by ICE and its companies, in accordance with its values as a leading institution promoting progress and social welfare.

1.3.2 Strategic Alignment

ICE’s **Social and Environmental Responsibility Strategy** is based on the strategic alignment established by the Strategy 4.0, particularly the Equity and Sustainability

¹⁶ ICE (2003). *Política Institucional Igualdad y Equidad de Género*. [Online]. Available at: <https://costarica.unfpa.org/es/publicaciones/pol%C3%ADtica-institucional-de-igualdad-y-equidad-de-g%C3%A9nero-del-ice>

¹⁷ ICE (2019). *Política Corporativa de Derechos Humanos del Grupo ICE*. [Online]. Available at: <https://www.grupoice.com/wps/wcm/connect/1047a14a-add1-4f55-a566-5a36aa07ad19/Pol%C3%ADtica+Corporativa+de+Derechos+Humanos.pdf?MOD=AJPERES&CACHEID=R00TWORKSPACE-1047a14a-add1-4f55-a566-5a36aa07ad19-n0tKRq7>

objective.¹⁸ Alongside the development of the Strategy 4.0, ICE evaluated the company’s alignment and contribution to the **Sustainable Development Goals (SDGs)**. Within the pillar of Equity and Sustainability of the Strategy 4.0, ICE established a Strategic Objective to promote the creation of value by implementing a comprehensive sustainability model based on the SDGs and the best international management and reporting practices. ICE’s alignment with the SDGs is presented in Figure 2.



Figure 2. Alignment of ICE’s Strategy 4.0 with the SDGs¹⁹

ICE’s strategic alignment allows for the execution of existing programs and new initiatives in line with environmental and social objectives to contribute to: (1) the creation of social, environmental, and economic value, (2) equity, diversity, and respect of individuals, (3) a contribution to the SDGs, (4) the sustainable use of resources, (5) the creation and strengthening of public private alliances, and (6) decarbonization of the economy.²⁰

¹⁸ Gerencia de Electricidad, ICE (2019). *Acciones de Sostenibilidad Social y Ambiental*. [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>

¹⁹ Gerencia de Electricidad, ICE (2019). *Acciones de Sostenibilidad Social y Ambiental*. [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>

²⁰ Gerencia de Electricidad, ICE (2019). *Acciones de Sostenibilidad Social y Ambiental*. [Online]. Available at: <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>

1.3.3 ICE's Actions in the Context of National Sustainable Development

As a government-run electricity and telecommunications services provider, ICE plays an important role in Costa Rica's sustainable development goals and objectives.

Costa Rica is committed to promoting the well-being of its people and the country's natural resources and recognizes that the best way to do so is by reinforcing the commitments made in its Nationally Determined Contribution (NDCs), presented to the international community.²¹ Costa Rica aims for a decarbonized economy with net-zero emissions by 2050, consistent with the long-term goal of limiting the increase of average global temperature to 1.5 degrees Celsius above pre-industrial levels.²² Figure 3 demonstrates the 1.5 degree scenario with public policy interventions that are compatible with net-zero emissions in 2050 presented in Costa Rica's National Decarbonization Plan.

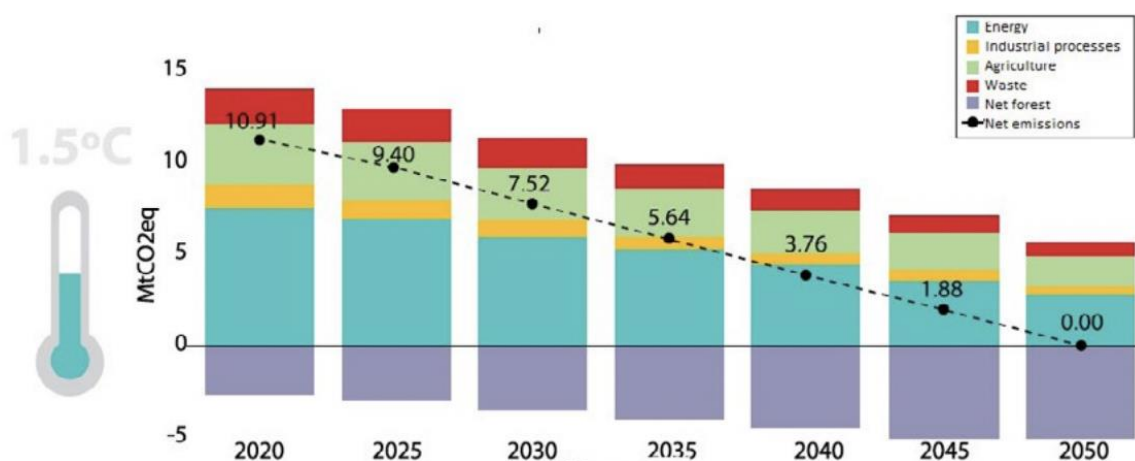


Figure 3. Sectoral Emissions in Costa Rica for the 1.5 Degree Scenario²³

The country conceives decarbonization and resilience as means to transform its development model to one based on social inclusion, the well-being of citizens, the circular economy, the bioeconomy, the creative and cultural economy, and green growth. Costa Rican climate action integrates decarbonization, adaptation and resilience in a

²¹ Government of Costa Rica Ministry of Environment and Energy (2015). *Costa Rica's Intended Nationally Determined Contribution*. [Online]. Available at: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Costa%20Rica%20First/INDC%20Costa%20Rica%20Version%202%200%20final%20ENG.pdf>

²² Gobierno Del Bicentenario (2018). *Plan Nacional De Descarbonización 2018 – 2050*. [Online]. Available at: <https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion>

²³ Gobierno Del Bicentenario (2018). *Plan Nacional De Descarbonización 2018 – 2050*. [Online]. Available at: <https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion>

sectoral and territorial way. The main public policies in each area of action are aimed at contributing to both reducing emissions and reducing climate vulnerability.

Regarding climate change, ICE has actively contributed to the fulfillment of Costa Rica's intended NDCs, National Energy Plan (*VII Plan Nacional de Energía 2015-2030*²⁴), and their National Decarbonization Plan (*Plan Nacional de Descarbonización*²⁵). In December 2020, Costa Rica announced that it will increase its efforts in response to climate change and confirmed its proposal to pursue a carbon-neutral and resilient economy. Adequate policy and planning of the National Electric System (SEN) has allowed the country to have a highly renewable grid. Since 2015, more than 98% of Costa Rica's generation has been sourced from renewable energy, the majority of which is hydropower. In 2019, the Costa Rican electricity grid was one of the few decarbonized systems in the world, with an emissions factor of 34.1 tCO₂e/GWh.^{26,27}

One of the challenges for Costa Rica moving forward described in the National Decarbonization Plan (*Plan Nacional de Desarrollo*²⁸), is to guarantee the supply of electricity at competitive prices, maintaining a renewable, efficient, and reliable matrix to face the new challenges arising from the increase in demand, as transportation and other industries are electrified. The electric grid in 2050 should be characterized for its sustainability, flexibility, and "intelligence" and allow for the integration of storage, distributed generation, and demand-side management.²⁹

ICE has led the installation of smart metering infrastructure in Costa Rica since 2013, which is a key component in the transformation towards a smart grid for the country. Smart meters are integral in the digitalization of the local distribution network boosting network efficiency and resiliency, representing a fundamental step to address the challenges posed by the energy transition. Both ICE and CNFL have been deploying smart meters in their respective concession zones. As of May 2021, ICE has 314,245 smart

²⁴ MINAE (2015). *VII Plan Nacional de Energía 2015 - 2030*. [Online]. Available at: <https://minae.go.cr/recursos/2015/pdf/VII-PNE.pdf>

²⁵ Gobierno Del Bicentenario (2018). *Plan Nacional De Descarbonización 2018 - 2050*. [Online]. Available at: <https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion>

²⁶ ICE (2020). *Inventario de Emisiones de Gases de Efecto Invernadero del Sistema Eléctrico Nacional 2020*.

²⁷ Gobierno Del Bicentenario (2018). *Plan Nacional De Descarbonización 2018 - 2050*. [Online]. Available at: <https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion>

²⁸ Gobierno Del Bicentenario (2018). *Plan Nacional De Descarbonización 2018 - 2050*. [Online]. Available at: <https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion>

²⁹ MINAE (2015). *VII Plan Nacional de Energía 2015 - 2030*. [Online]. Available at: <https://minae.go.cr/recursos/2015/pdf/VII-PNE.pdf>

meters in operation, representing 37% of their customer base.³⁰ As of the same date, CNFL has installed 199,000 smart meters, representing 33% of their customer base.³¹

The future of the electricity industry is framed by three main trends: (1) increasing the electrification of transport and industry, (2) decentralization of energy resources, and (3) digitization of the network. The installation of smart meters contributes to all three of these long-term objectives, and ICE is committed to take advantage of its early and pioneering actions in smart meter deployment to promote this transformation.

³⁰ This is taking into consideration the number of smart meters connected to ICE's billing system. The total number of clients is 834,798.

³¹ This is taking into consideration the number of smart meters reported in CNFL's technical database. It does not necessarily reflect the number of smart meters in operation. The total number of clients is 588,561.

Rationale for the Issuance

Sustainability has been immersed as a decisive element in ICE's actions over the past seven decades, and the company has been a key contributor to the sustainable development of Costa Rica by promoting the universality of its services and the sustainable management of its natural resources. ICE has played a key role in the development of Costa Rica's renewable electricity system and is continuing to lead in the transformation towards a smart grid for the country.

To reinforce ICE's commitment and take advantage of its early and pioneering actions in smart meter deployment, ICE intends to issue a Sustainability-Linked Bond (SLB). ICE hopes that the issuance of the SLB will inspire other issuers in Costa Rica and in the electricity and telecommunications sectors to address sustainability challenges. Through the SLB, ICE will focus on increasing national coverage of smart meters to promote the transition of the country's grid to a smart grid, which is the first step towards achieving the long-term objectives of (1) increasing the electrification of transport and industry, (2) decentralization of energy resources, and (3) digitization of the network.

Both ICE and CNFL have been deploying smart meters in an independent manner through distinct financing, strategies, and planning in their respective zones. CNFL is concentrated mainly in the Metropolitan Region of San Jose, covering an area of 885 km² with 1,583,038 inhabitants and a population density of 1,788.2 inhabitants/km². Meanwhile, ICE has a broader geographical distribution, covering an area of 38,715 km² with 2,062,637 inhabitants and a population density of 53.3 inhabitants/km².³²

CNFL's deployment of smart meters has been focused on the Metropolitan Region of San José with more concentrated urban areas, whereas ICE covers a broader geographical distribution including rural and coastal areas which present larger challenges in the installation of the systems due to climatic conditions and dispersed populations in these areas.

Given the distinct nature and independence in the way CNFL and ICE operate and the different levels of challenges in smart meter deployment for the two entities, the KPI and SPT will be exclusively focused on ICE, the parent entity.

³² ICE (2019). Índice de Cobertura Eléctrica. [Online]. Available at: <https://www.grupoice.com/wps/wcm/connect/10261169-f251-465d-9b95-0b17c7baa49e/Índice+de+Cobertura+Eléctrica+2019.pdf?MOD=AJPERES&CVID=n1u6RVf>

ICE will commit to a specific environmental outcome, setting an ambitious performance target that is relevant, core, and material to its business (Strategy 4.0) and Costa Rica's sustainability goals. This Framework provides an overview of the SLB, and investors should refer to relevant documentation regarding the transaction.

Sustainability-Linked Bond Framework

This Framework has been established in accordance with the Sustainability-Linked Bond Principles (SLBP) 2020 of the International Capital Market Association (ICMA). The SLBPs are voluntary guidelines that describe the best practices for financial instruments to incorporate future results related to sustainability, clarifying the approach to issuing SLBs and contributing to the development of the SLB market.³³

ICE’s Sustainability-Linked Bond Framework is aligned with the five components of the SLBP:

- (1) Selection of Key Performance Indicators (KPIs)
- (2) Calibration of Sustainability Performance Targets (SPTs)
- (3) Bond Characteristics
- (4) Reporting
- (5) Verification.³⁴

SLBs are financial instruments for which the financial and/or structural characteristics may vary depending on whether the issuer achieves previously defined sustainability objectives. In this sense, the issuer of an SLB explicitly commits to improve, within a set period, certain sustainability outcomes that are relevant, fundamental, and material to its business. Unlike a green, social, or sustainability use of proceeds bond, the funds raised with SLBs are used for general corporate purposes.

1.4 Selection of the Key Performance Indicator (KPI)

This issuance is linked to the achievement of one KPI, which is core, relevant and material to ICE’s business:

1.4.1 KPI: Digitalization of Costa Rica’s Distribution Network

Definition of the KPI – Smart Metering Coverage

KPI:	Number of smart meters in operation ³⁵ in ICE’s concession zone ³⁶ .
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³³ ICMA (2020). *Sustainability-Linked Bond Principles 2020*. [Online]. Available at: <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/sustainability-linked-bond-principles-slb/>

³⁴ ICMA (2020). *Sustainability-Linked Bond Principles 2020*. [Online]. Available at: <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/sustainability-linked-bond-principles-slb/>

³⁵ The smart meter is considered operational once it is installed and connected to ICE’s billing system.

³⁶ ICE’s concession zone is defined by the local regulator ARESEP. See Figure 1.

Historical Context and Technology Background:

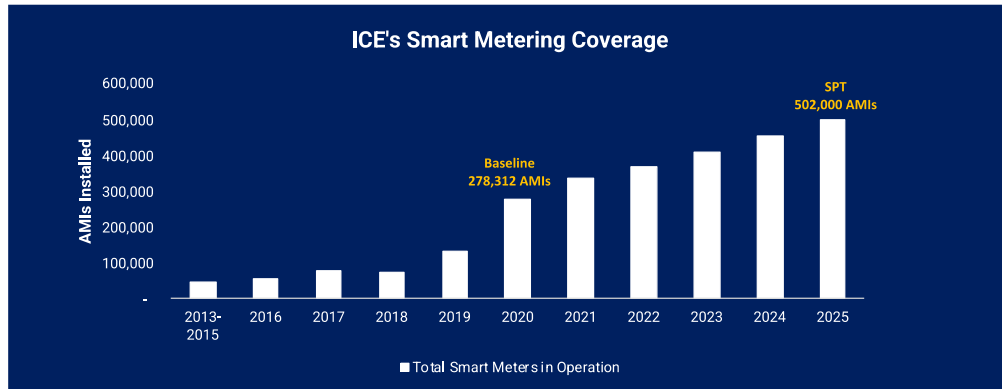


Figure 4. ICE's Smart Meter Coverage

ICE has led the deployment of smart metering infrastructure in Costa Rica since 2012, when the company elaborated studies to integrate the technology in a massive way. The first smart meters were installed and became operational in 2013. Since then, the company has accelerated their deployment throughout the country, first focusing on urban areas, where the installation time was quicker and more efficient as more customers were concentrated in smaller areas.

As of December 31st, 2020, ICE had installed and put into operation 278,312 smart meters. This represents 33.64% of ICE's 827,325 electricity customers. Moving forward in their smart meter deployment plan, ICE is focusing on harder to reach customers located in rural and coastal areas³⁷. These locations imply additional installation times because clients are more dispersed, and the equipment is more easily damaged by coastal climatic conditions. As of December 31st, 2020, rural clients represent 69% of ICE's total client base. Moving forward, ICE has the ambition to achieve 100% of its clients with smart metering systems by 2035.

As a regulated entity by ARESEP, ICE can only obtain smart meters that fulfill the requirements established in the technical normative for all distributing companies, which are based on the American National Standard for Electricity Meters (ANSI). ICE carried out studies to determine the best-available technologies and trends within this market

³⁷ Such as: Las Juntas de Abangares, Sámará, Turrúcares, Poas, Guácimo, Juan Viñas, Miramar, Judas de Chomes, Parrita, Bagaces, Nuevo Arenal.

	<p>and through an international public tender process selected the one that complies with the technical specifications as defined by ICE. During this process, ICE evaluated various smart meter solutions.</p> <p>According to ICE’s technical team’s analysis, the chosen advanced metering infrastructure (AMI) technology under the ANSI standard has meter-type data collectors that allow for an agile installation of the collector in any customer service socket, without the need for high-rise towers, cranes, or external antennas. This facilitates its implementation, operation, and maintenance, reducing costs and time. These smart meters are 100% digital and allow for real-time bidirectional communication between ICE and its customers. The smart meters utilize state-of-the-art technology that apply a military algorithm to create a radio frequency communications network, which is adapted to the different urban or rural conditions in the country. The latest version of the smart meters has a new processor with more speed, greater storage capacities, multiple measurement variables (temperature, frequency, line voltage), and better compatibility with different communication standards. The smart meters also have a management software that allows platforms to support SmartCities and the Internet of Things (IOT).</p> <p>ICE’s experiences so far with the selected technology have demonstrated an effectiveness of 99 to 100% to obtain remote readings as well as continuity and availability rates close to 100%. For each international public bid process, ICE evaluates the technology to be purchased to ensure that the best available technology is acquired.</p>
<p>Calculation Methodology Scope and Benchmark</p>	<p>This KPI is calculated based on the total number of smart meters in operation on the date of measurement. The smart meter is considered operational once it is installed and connected to ICE’s billing system. To install and connect a smart meter for residential, commercial, or industrial use, ICE sends technicians on site. Most of ICE’s customers are residential (80%), followed by commercial (15%) and industrial (5%). During installation, ICE’s technicians also recondition the system to ensure a long lifetime and that all the components are working effectively.</p> <p>ICE administrates its database on information regarding its electricity clients within its Electric Commercial System (<i>Sistema Comercial</i></p>

	<p><i>Eléctrico</i>) of the Distribution and Marketing Division (<i>División Distribución y Comercialización</i>). Within this database, ICE can see detailed information regarding their clients, including whether that client has a smart meter, along with the total number of electricity clients in ICE’s database. The information contained on this database can be used to determine the number of smart meters in operation as well as the total number of clients. This information can be verified externally.</p> <p>Within the first year of issuance, ICE commits to an external verification of the last three years of historical data regarding smart meters in operation. Annually and until the bond’s maturity, ICE commits to a post-issuance external verification of the number smart meters in operation. If the methodology to calculate the KPI were to change, ICE commits to a post-issuance external verification to evaluate this modification.</p> <p>This KPI can be benchmarked using the percentage of smart meters in operation over the total number of customers.</p>
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Rationale for the KPI

<p>Justification for Selection</p>	<p>ICE has led the installation of smart meters in Costa Rica, which is a key component in the transformation towards the digitalization of the local distribution network boosting network efficiency and resiliency, representing a fundamental step to address the challenges posed by the energy transition. Additionally, this KPI is in line with various national strategies and plans, such as the National Energy Plan (<i>VII Plan Nacional de Energía 2015-2030</i>³⁸), National Decarbonization Plan (<i>Plan Nacional de Desarrollo</i>³⁹), along with the National Strategy for Intelligent Grids (<i>Estrategia Nacional de Redes Eléctricas Inteligentes</i>⁴⁰), making this relevant and material for ICE.</p>
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³⁸ MINAE (2015). *VII Plan Nacional de Energía 2015 – 2030*. [Online]. Available at: <https://minae.go.cr/recursos/2015/pdf/VII-PNE.pdf>

³⁹ Gobierno Del Bicentenario (2018). *Plan Nacional De Descarbonización 2018 – 2050*. [Online]. Available at: <https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion>

⁴⁰ SEPSE (2020). *País Avanza en el Desarrollo de una Estrategia Nacional de Redes Eléctricas Inteligentes*. [Online]. Available at: <https://sepse.go.cr/pais-avanza-en-el-desarrollo-de-una-estrategia-nacional-de-redes-electricas-inteligentes/>



	<p>Smart meters measure energy consumption and optimize data management on energy use, which brings various benefits to ICE's clients and to ICE.</p> <p>From customers' perspective, because of the near to real time feedback on energy consumption, smart meters enable ICE's customers to better manage their use, save energy, and lower their electricity bills. The energy savings possible using smart meters can vary and depend on the types of strategies used by both the consumer and the company. Academic studies have cited 1-8% possible energy savings using near-real-time and behavior feedback, 1-7% possible energy savings using pricing with time-varying rates, and 1-4% possible energy savings using conservation voltage reduction.⁴¹ With smart meters, ICE's electricity customers could opt for pre-paid electricity services or hourly residential rates, which allows them to adjust their consumption based on the hours during which the cost of electricity is lower. Smart meters have also allowed for the provision of new services for ICE, such as remote reading of water use, which can also enable ICE's customers to manage and save on their water consumption. Additionally, for those customers who wish to generate electricity through distributed renewable sources, smart meters allow customers to measure the electricity their household supplies to the grid and communicate it to ICE.</p> <p>There are various benefits for ICE as well. Smart meters allow remote and automatized reading of consumption data. ICE published a study in 2020 that demonstrated that smart meters were able to better capture consumption data, which improved the precision of the reading of real electricity consumption data. This improved ICE's billing accuracy by 1%.⁴² This optimizes ICE's operational efficiency (remote reading, connection, and disconnection) and bidirectional communication with clients, providing more reliable information on consumer demand profiles, allowing customers to achieve greater energy savings. Smart meters also improve monitoring of the voltage of electrical services, allowing ICE to be more prepared to handle network operation and maintenance and compliance with the regulator's supply voltage</p>
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⁴¹ Rachel Gold, Corri Waters, and Dan York (2020). *Leveraging Advanced Metering Infrastructure to Save Energy*. [Online]. Available at: <https://www.aceee.org/sites/default/files/publications/researchreports/u2001.pdf>

⁴² ICE (2020). *Informe sobre variación del consume al instalar medidores AMI diciembre 2020*.

	<p>regulations. In the event of voltage outages, smart meters will identify the exact area for quick attention and response. Additionally, through the installation of smart meters, ICE has been able to study the chargeability of transformers, verifying overloaded or underused equipment to make changes to optimize performance.</p> <p>The future of the electricity industry is framed by three main trends: (1) increasing the electrification of transport and industry, (2) decentralization of energy resources, and (3) digitization of the network. The installation of smart meters contributes to all three of these long-term objectives.</p>
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Consistency of the KPI with ICE’s Strategy and Other Sustainability Goals

SDGs		SDG 7.3: “By 2030, double the global rate of improvement in energy efficiency.” ⁴³
		SDG 9.4: “By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.” ⁴⁴
ICE’s Strategy	<p>This KPI is aligned with various objectives of ICE’s Strategy 4.0. In terms of the evolution of <i>business and customer experience</i>, remote measuring will allow better client service, aligning with the digital transformation strategy led by ICE and the provision of new services. Smart meters will directly support ICE’s operational efficiency, modernization, and digital transformation as they will optimize the processes of reading, connection, and disconnection of electricity services, which will allow the company to operate more efficiently and will be an important step towards the digital transformation of the country’s grid into a smart grid. Finally, the installation of smart meters will help meet goals established in Costa Rica’s National Decarbonization Plan, aligning with the pillar of <i>equity and sustainability</i>.</p>	

⁴³ United Nations. *Sustainable Development Goals*. [Online]. Available at: <https://sdgs.un.org/goals/goal7>
⁴⁴ United Nations. *Sustainable Development Goals*. [Online]. Available at: <https://sdgs.un.org/goals/goal9>

<p>Costa Rica's Sustainability Objectives</p>	<p>This KPI is aligned with various national plans aimed at transforming the national electricity grid. Since 2015, Costa Rica has embarked on a path to develop a National Intelligent Grid Strategy (<i>Estrategia Nacional de Redes Eléctricas Inteligentes</i>⁴⁵), which has the goal to achieve an intelligent, flexible, and low-cost electrical system that takes advantage of the benefits of technological innovation. Smart meters are key components that make up the basic infrastructure of intelligent grids and are aligned with the three strategic axes of the plan, which are to (1) improve the reliance and quality of the electricity grid, (2) maintain a renewable energy grid through greater penetration of distributed renewable energy resources, and (3) improve energy efficiency and demand response management.⁴⁶ The KPI is also aligned with the National Energy Plan (<i>VII Plan Nacional de Energía 2015-2030</i>⁴⁷), which set a roadmap for the development of smart grids that optimize electricity services and the National Decarbonization Plan (<i>Plan de Descarbonización</i>⁴⁸), which seeks to establish a vision or national strategy for the operation of smart grids "that includes the acquisition and installation of smart meters and the monitoring and analysis of the information from the databases that feed the meters."⁴⁹ Additionally, the KPI is aligned with the National Plan for Development and Public Investment of the Costa Rican Government (<i>Plan Nacional de Desarrollo y de Inversión Pública del Bicentenario</i>⁵⁰), which seeks to increase the number of smart devices in the SEN to improve competitiveness.⁵¹</p>
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⁴⁵ SEPSE (2020). *País Avanza en el Desarrollo de una Estrategia Nacional de Redes Eléctricas Inteligentes*. [Online]. Available at: <https://sepse.go.cr/pais-avanza-en-el-desarrollo-de-una-estrategia-nacional-de-redes-electricas-inteligentes/>

⁴⁶ SEPSE (2020). *País Avanza en el Desarrollo de una Estrategia Nacional de Redes Eléctricas Inteligentes*. [Online]. Available at: <https://sepse.go.cr/pais-avanza-en-el-desarrollo-de-una-estrategia-nacional-de-redes-electricas-inteligentes/>

⁴⁷ MINAE (2015). *VII Plan Nacional de Energía 2015 – 2030*. [Online]. Available at: <https://minae.go.cr/recursos/2015/pdf/VII-PNE.pdf>

⁴⁸ Gobierno Del Bicentenario (2018). *Plan Nacional De Descarbonización 2018 – 2050*. [Online]. Available at: <https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion/>

⁴⁹ Gobierno Del Bicentenario (2018). *Plan Nacional De Descarbonización 2018 – 2050*. [Online]. Available at: <https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion/>

⁵⁰ Ministerio de Planificación Nacional y Política Económica (2019). *Plan Nacional de Desarrollo y de Inversión Pública del Bicentenario 2019 – 2022*. [Online]. Available at : <http://www.da.go.cr/wp-content/uploads/2016/07/Plan-Nacional-de-Desarrollo-e-Inversiones-P%C3%BAblicas-2019-2022.pdf>

⁵¹ Ministerio de Planificación Nacional y Política Económica (2019). *Plan Nacional de Desarrollo y de Inversión Pública del Bicentenario 2019 – 2022*. [Online]. Available at : <http://www.da.go.cr/wp-content/uploads/2016/07/Plan-Nacional-de-Desarrollo-e-Inversiones-P%C3%BAblicas-2019-2022.pdf>

1.5 Calibration of the Sustainability Performance Target (SPT)

ICE has set an ambitious SPT for the KPI selected.

1.5.1 SPT: Installation of 502,000 Smart Meters by 2025

SPT:	By December 31 st , 2025, achieve the operation of 502,000 smart meters. ⁵²
SPT Observation Date	December 31 st , 2025.
Baseline	As of December 31 st , 2020, ICE had installed and put into operation 278,312 smart meters. This represents 33.64% of ICE’s 827,325 electricity customers.
Ambition	<p>As the largest electricity service provider in the country, ICE has led the deployment of smart meters in Costa Rica. Since 2013, ICE has accelerated the deployment of smart meters, focusing first on installing meters in the most concentrated urban areas. ICE is looking to reach their rural and coastal customers and achieve the installation of 502,000 smart meters by 2025, which would represent 54.45% of ICE’s customers.⁵³ This is in line with their long-term goal of reaching 100% smart meter coverage by 2035.</p> <p>Compared to its peers, ICE has placed a strong emphasis on smart meter deployment and achieved high levels of smart meter penetration in the country.</p> <p>Within Costa Rica, ICE is responsible for the installation of most smart meters in the country (47%) compared to other electricity service companies: CNFL (ICE’s subsidiary) 30%, COOPEGUANACASTE 8%, COOPELESCA 7%, JASEC 3%, COOPESANTOS 2%, ESPH 1%, and COOPEALFARO 0.4%.^{54,55}</p>

⁵² The smart meter is considered installed once it is operating and connected to ICE’s billing system.

⁵³ Considering an estimation of ICE’s customer base in 2025 of 922,000 customers.

⁵⁴ These numbers are based on the total number of clients from each of the distribution companies published by ARESEP and a mix of commercial and technical data provided by each of the distribution companies.

⁵⁵ ARESEP (2021). *Comportamiento de Consumo Promedio*. [Online]. Available at: <https://app.powerbi.com/view?r=eyJrljoiODMwOGM4MGMtOTljMy00NTdjLTliZmUtN2Y1MGM5Njk4OGlxliwidCI6IjBkNzIzOGY4LWI3ODQ0tNDk2MC1iZGUyLTZlMzZlM1MwQyNDcwZCIsImMiOiR9>

At a regional level, different distribution companies have varying levels of ambition regarding this KPI. Some represent lower levels of coverage and focused only on certain customer segments. This is the case of Enel Perú, which has installed more than 4,027 smart meters by the end of 2018 focused on industrial clients (representing 5% of their customer base) and their strategy is to cover this group only.⁵⁶ On the other hand, the *Administración Nacional de Usinas y Trasmisiones Eléctricas* (UTE) in Uruguay appears to be more ambitious, as they have covered 50% of their customers in 2020 and aim to achieve 100% of coverage by 2023⁵⁷.

At the country level, Costa Rica has a high level of smart meter installation at 18%. Comparatively, in Latin America only 6% of meters are smart meters as many countries still have a small percentage of smart meters deployed: Chile 9%, Mexico 8%, Brazil 4%, Ecuador 3%, Colombia 3%.⁵⁸

This SPT is ambitious because it requires ICE to manage several aspects in an integrated fashion. This includes the acquisition of the best available equipment meeting the ANSI standard in the international markets through competitive public bids. After an elaborate comparison process, a specific technology was chosen for a variety of reasons, including that it allowed for an agile installation of the collector in any customer service socket, without the need for high-rise towers, cranes, or external antennas. Amongst its other benefits, this is a crucial aspect considering the geographic and climatic conditions in the rural and coastal areas where ICE is focusing its installation of smart meters. Furthermore, ICE must deal with delays in deliveries, limited local workforce with the capacity to effectively install the smart meters, and the additional times required to install smart meters in harder to reach rural and coastal areas. In addition, ICE must raise financing and allocate scarce financial resources to this important investment.

⁵⁶ Enel Peru (2018). Reporte de sostenibilidad Enel Distribución Perú. [Online]. Available at: https://www.enel.pe/content/dam/enel-pe/inversores/pdf/reportes/informes-de-sostenibilidad/Reporte_de_Sostenibilidad_ENEL_Dx_2018.pdf

⁵⁷ UTE (2019). *Los beneficios de los medidores inteligentes*. [Online]. Available at: <https://portal.ute.com.uy/noticias/los-beneficios-de-los-medidores-inteligentes>

⁵⁸ Northeast Group LLC (2021). *Emerging Markets Smart Grid: Outlook 2021*. [Online]. Available at: <http://www.northeast-group.com/reports/Brochure-Emerging%20Markets%20Smart%20Grid-Outlook%202021-Northeast%20Group.pdf>

	<p>This ground-breaking digitalization effort will empower customers, giving them active control of their energy consumption, as well as boosting network efficiency and resiliency, representing a fundamental step to address the challenges posed by the energy transition and Costa Rica’s decarbonization plan.</p>
<p>Strategy and Action Plan</p>	<p>The installation of smart meters represents a total investment of USD 56.62 M. This includes the acquisition of smart meters, the human capital for installation, complementary materials to recondition existing services, technical training for staff, modifications to existing support platforms, and other administrative and operational costs.</p> <p>As in any project, there are some risks that could result in delays in its procurement and installation. These risks include, but are not limited to:</p> <ul style="list-style-type: none"> • Technical risks if materials and human resources necessary to carry out the work are not available, • Technology risks if suppliers do not meet specifications required, and • Organizational risks if the projects lose financing. <p>The strategy and action plan to achieve compliance with the SPT is to have the support of the development staff in addition to the maintenance staff in the installation of the meters. ICE plans the acquisitions of smart meters one year in advance, which will be installed the following year. To install the meters annually, ICE hires the Engineering and Construction team, which oversees acquiring the complementary materials required to recondition the services at each meter change. In installation planning, annual plans are defined that are monitored monthly to ensure that milestones are being met within the established timeframe.</p> <p>Factors that support the achievement of the SPT include:</p> <ul style="list-style-type: none"> • the commitment and support of the Directorate and Electricity Management for the smart meter project, • Approval of financing for the acquisition of smart meters from multilateral organizations (such as the Inter-American Development Bank), • Approvals to have the ICE counterpart budget for contracting the installation of meters, and

	<ul style="list-style-type: none">• Commercial and technical commitment from the Distribution and Marketing Division to provide support and resources for the project.
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1.6 Bond Characteristics

ICE will link the SPT defined in this framework to the financial characteristics of its Sustainability-Linked Instrument issuances. For any Sustainability-Linked Instrument aligned with this Framework, if the SPT has not been achieved by the Target Observation Date, a premium will be payable by ICE, such as, but not limited to a step-up in coupon margin. The amount, timing and mechanism for payment of the premium will be specified in the indenture and other final terms of the instrument.

If, for any reason, the performance level against the SPT cannot be calculated or reported in satisfactory manner supported by a verification assurance certificate provided by an independent auditor, the premium payment will be applicable. If, for any reason, ICE does not publish the relevant verification assurance certificate within the time limit as prescribed by the terms and conditions of the indenture of the Sustainability-Linked Instrument, the premium payment will be applicable. Unless specified in the instrument documentation, no assurance can be provided that the proceeds of the Sustainability-Linked Instruments will be allocated to finance green or social projects.

1.7 Reporting

Annually until bond maturity, and in any case for any period relevant for assessing the trigger of the SPT performance leading to potential adjustments, ICE will publish and keep readily available and accessible on its website⁵⁹ a Sustainability Linked Bond update as a part of its annual report, which will include:

- Updated information on the performance of the selected KPI, including baselines (where relevant),
- A verification assurance report of the SPT that describes the performance in relation to the SPT and its impact on the financial and/or structural characteristics of the bond, and
- Any additional information that allows investors to monitor the SPT progress.

When possible, the report may include:

⁵⁹ <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>

- A qualitative and/or quantitative explanation of the contribution of the main factors behind the evolution of the KPI on an annual basis,
- An illustration of the positive impacts related to improved sustainable performance, and/or
- Any reassessment of the KPI and/or reformulation of the SPT and/or adjustments of baselines or KPI scope.

1.8 Verification

1.8.1 Second Party Opinion

ICE will obtain and publicly disclose the Second Party Opinion (SPO) conducted by an internationally recognized firm with environmental and social expertise, who will provide an opinion on the sustainability benefits of ICE's Sustainability-Linked Bond Framework, as well as alignment with the SLBP 2020. The SPO will be readily available and easily accessible on ICE's website.⁶⁰

1.8.2 Annual Verification

Within the first year of issuance, ICE commits to an external verification of the last three years of historical data regarding smart meters in operation.

Annually until bond maturity, and in any case of material changes impacting the instruments financial characteristics for any period relevant for assessing the trigger of the SPT performance leading to potential adjustments, ICE will obtain an independent external verification from an internationally recognized external verifier that will demonstrate the level of performance of the SPTs for each KPI. ICE will publish and keep readily available and accessible this report on its website.⁶¹

⁶⁰ <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>

⁶¹ <https://www.grupoice.com/wps/portal/ICE/Transparencia/informes>