Costa Rican Institute of Electricity

Energy Mix and Future Plans

Costa Rican Institute of Electricity (ICE)

- Government Owned Institution
- Foundation year: 1949
- Industrial activity:
  - Electricity
  - Telecommunications
  - Infocommunications
  - Digital services

Costa Rican Institute of Electricity (ICE)

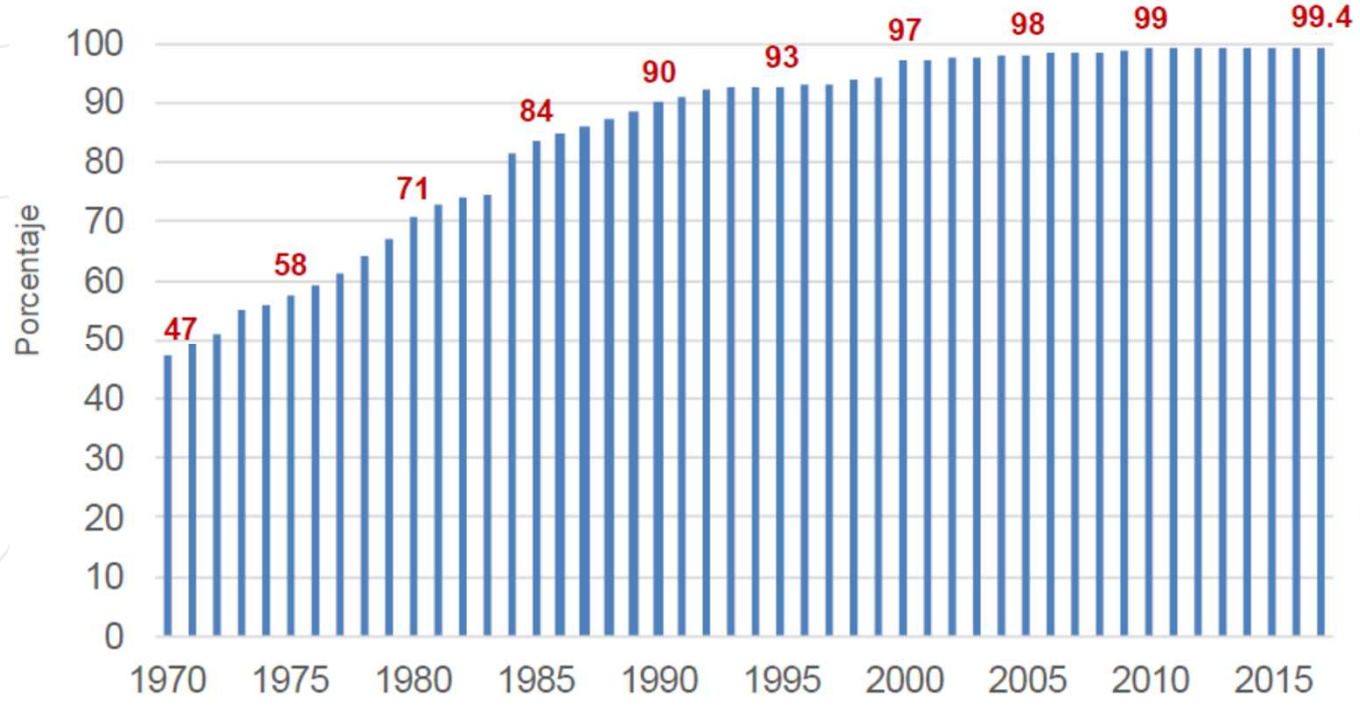
- Prioritization of the use of renewable energy sources from the beginning

"To establish the Costa Rican Electricity Institute, which is entrusted with the rational development of physical energy producing sources that the Nation has, especially hydraulic resources."

Law N°449, Foundation of the Costa Rican Institute of Electricity, 1949

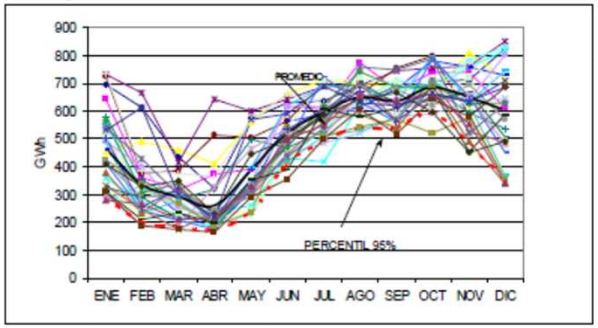
Electric System Development

Electricity Access (1970-2017)

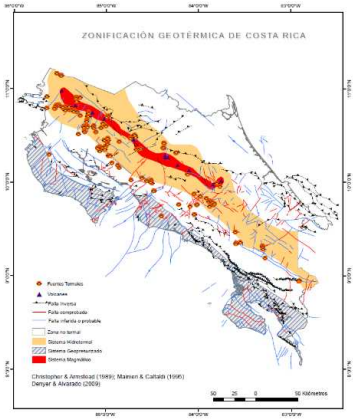


Electric System Planning

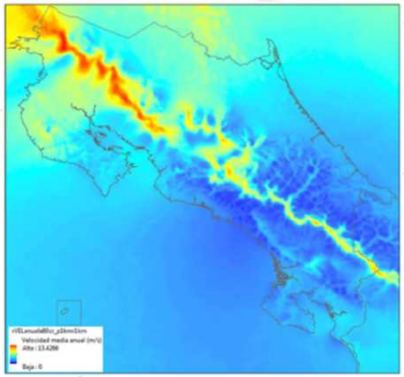
- Energy resources inventory



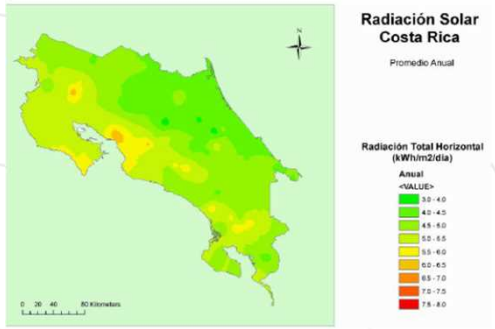
Hydrological series



Geothermal potential



Wind resource



Solar resource

Electric System Planning

- Centralized planning for the development of the national electricity system
  - Software:

    SDDP – Stochastic hydrothermal dispatch with network restrictions

    OptGen – Model for generation expansion planning and regional interconnections

    NCP – Short term operation programming

Electric System Planning

INSTITUTO COSTARRICENSE DE ELECTRICIDAD
DIRECCION CORPORATIVA DE ELECTRICIDAD

PLANIFICACION Y DESARROLLO ELECTRICO
PROCESO EXPANSION DEL SISTEMA

PLAN DE EXPANSION DE LA GENERACION ELECTRICA 2018–2034

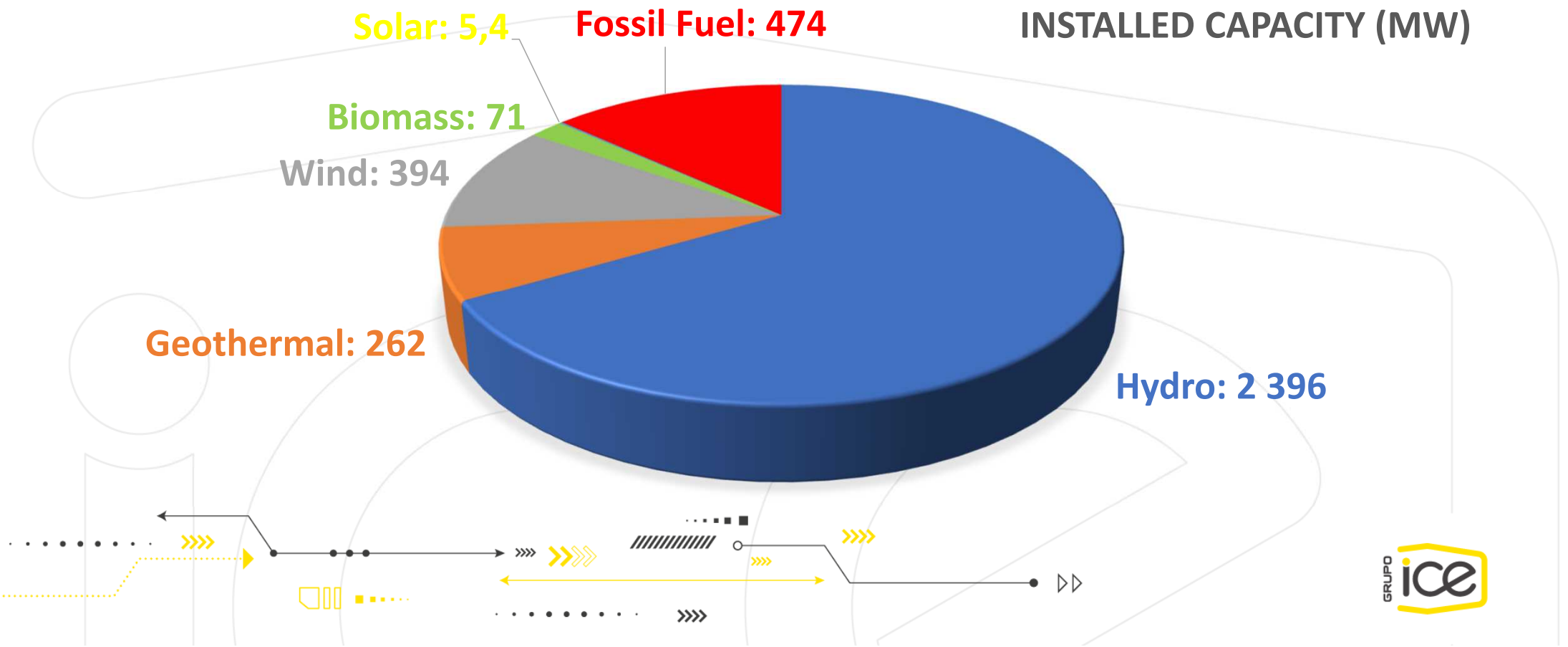
Mayo 2019
San José, Costa Rica

PLAN DE EXPANSION DE LA GENERACION 2018-2034

Año	DEMANDA				OFERTA				
	Energía GWh	% crec	Pot MW	% crec	Mes	Proyecto	Fuente	Potencia MW	Cap Instalada MW
						Capacidad efectiva instalada a Dic2017:			3,530
2018	11,216	1.8%	1,714	1.3%	1	Tejona	Eólic	-3	3,527
					4	Los Negros II	Hidro	28	3,555
					7	PS Cooperativo	Solar	6	3,561
					8	Río Naranjo	Eólic	9	3,570
2019	11,433	1.9%	1,739	1.4%	1	Barranca	Térm	-36	3,534
					1	El Cacao	Eólic	21	3,556
					1	San Antonio Gas	Térm	-37	3,519
					1	Valle Escondido	Solar	5	3,524
					3	Pailas 2	Geot	55	3,579
2020	11,693	2.3%	1,765	1.5%	1	Tejona	Eólic	-7	3,572
2021	11,974	2.4%	1,804	2.2%	2	San Rafael	Hidro	7	3,579
					4	Río Bonilla 1320	Hidro	6	3,584
					10	Río Bonilla 510	Hidro	6	3,591
2022	12,264	2.4%	1,830	1.5%					3,591
2023	12,545	2.3%	1,866	2.0%					3,591
2024	12,826	2.2%	1,897	1.6%	1	Tejona	Eólic	-10	3,581
2025	13,105	2.2%	1,938	2.1%					3,581
2026	13,383	2.1%	1,973	1.8%	1	Borinquen 1	Geot	55	3,636
2027	13,661	2.1%	2,008	1.8%					3,636
2028	13,942	2.1%	2,038	1.5%	1	Eólico	Eólic	50	3,686
					1	Miravalles1	Geot	-42	3,643
					1	Solar	Solar	50	3,693
2029	14,226	2.0%	2,079	2.0%	1	Eólico	Eólic	50	3,743
					1	Miravalles1- Modern	Geot	35	3,778
					1	Solar	Solar	100	3,878
2030	14,513	2.0%	2,108	1.4%	1	Borinquen 2	Geot	55	3,933
					1	Miravalles2	Geot	-42	3,891
2031	14,804	2.0%	2,146	1.8%	1	Miravalles2- Modern	Geot	35	3,926
2032	15,094	2.0%	2,177	1.5%					3,926
2033	15,375	1.9%	2,219	1.9%	1	Eólico	Eólic	50	3,976
2034	15,645	1.8%	2,253	1.5%	1	Eólico	Eólic	100	4,076

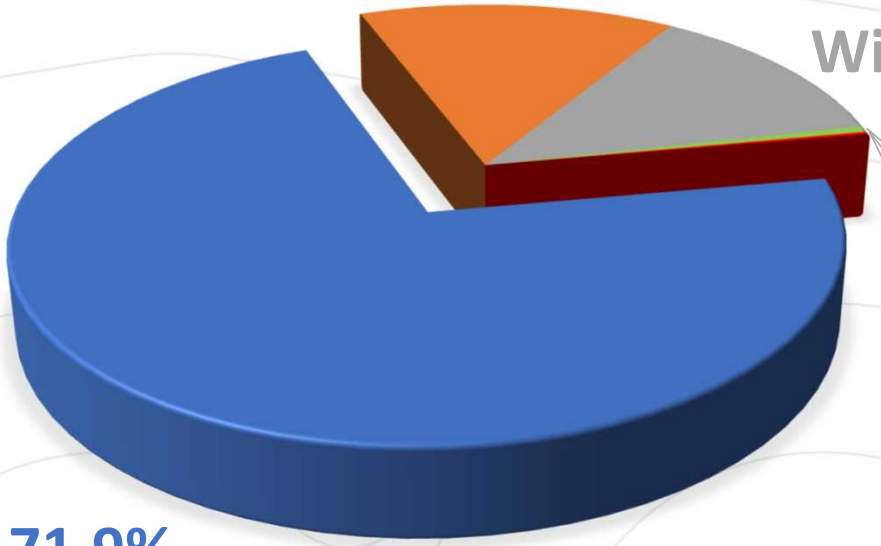
Formulation of the “Generation Expansion Plan”

Costa Rican Electric Energy Mix



Costa Rican Electric Energy Mix

ELECTRIC ENERGY MIX IN 2020



Geothermal: 14,6%

Wind: 12,7%

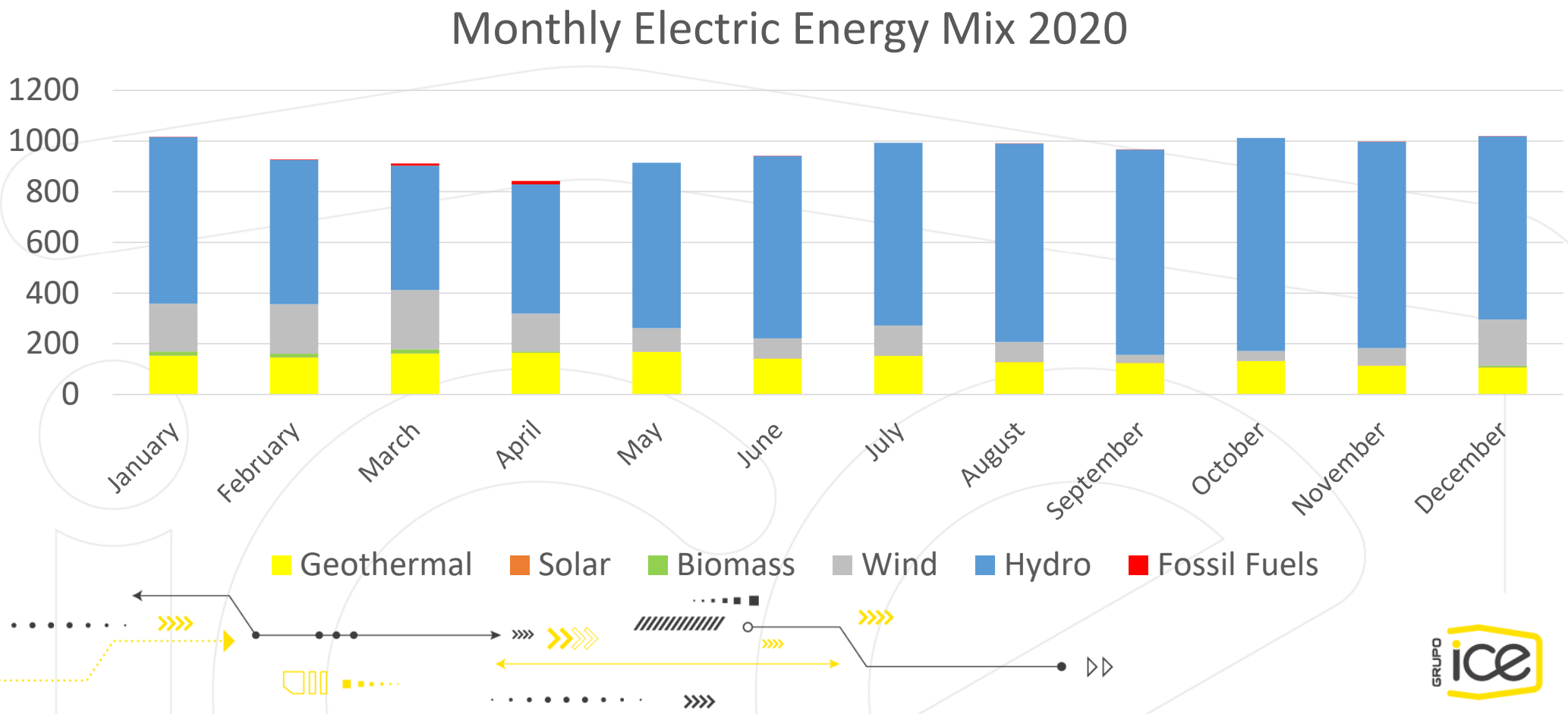
Biomass: 0,5%

Solar: 0,01%

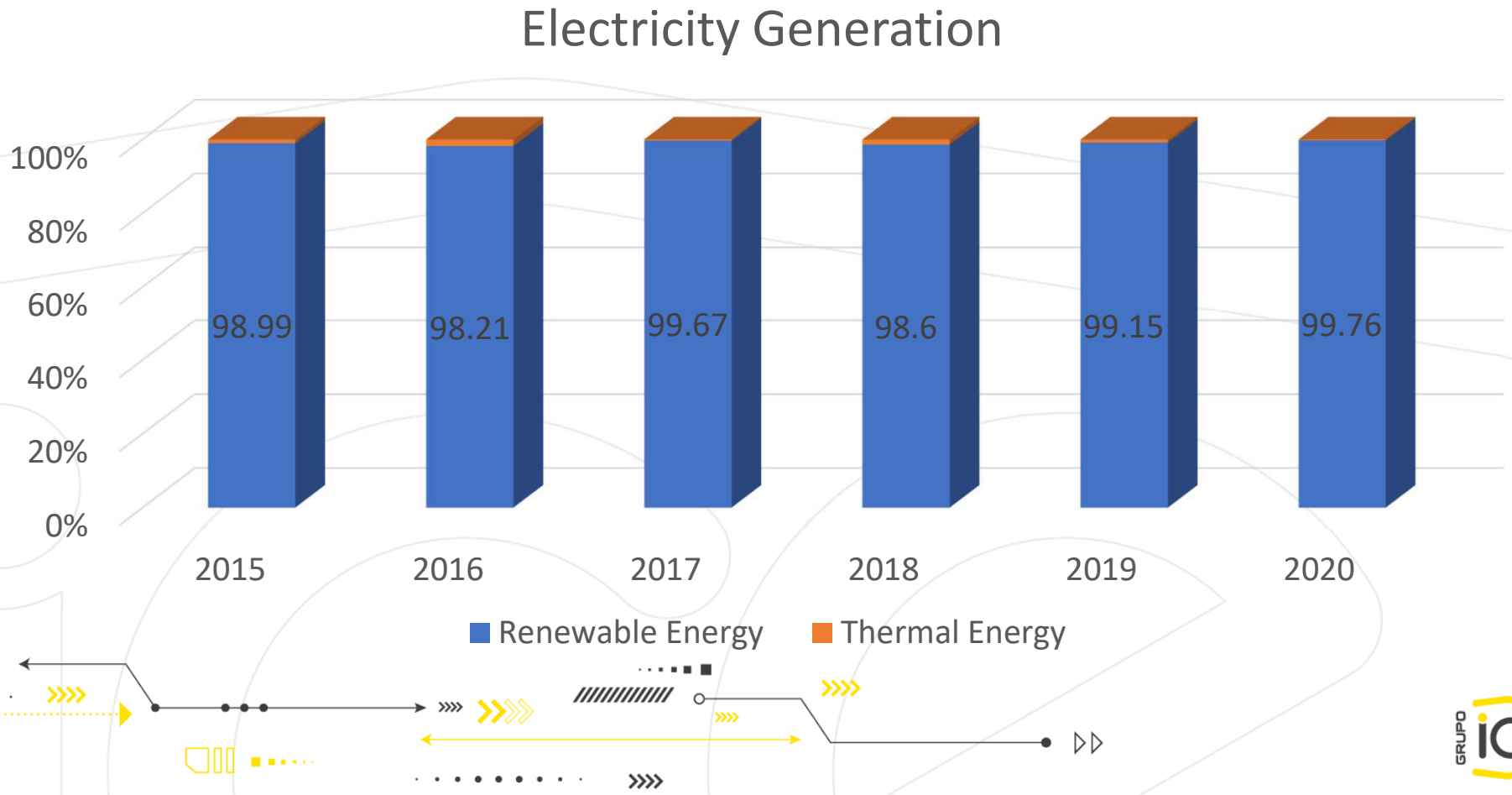
Fossil Fuels: 0,2%

Hydro: 71,9%

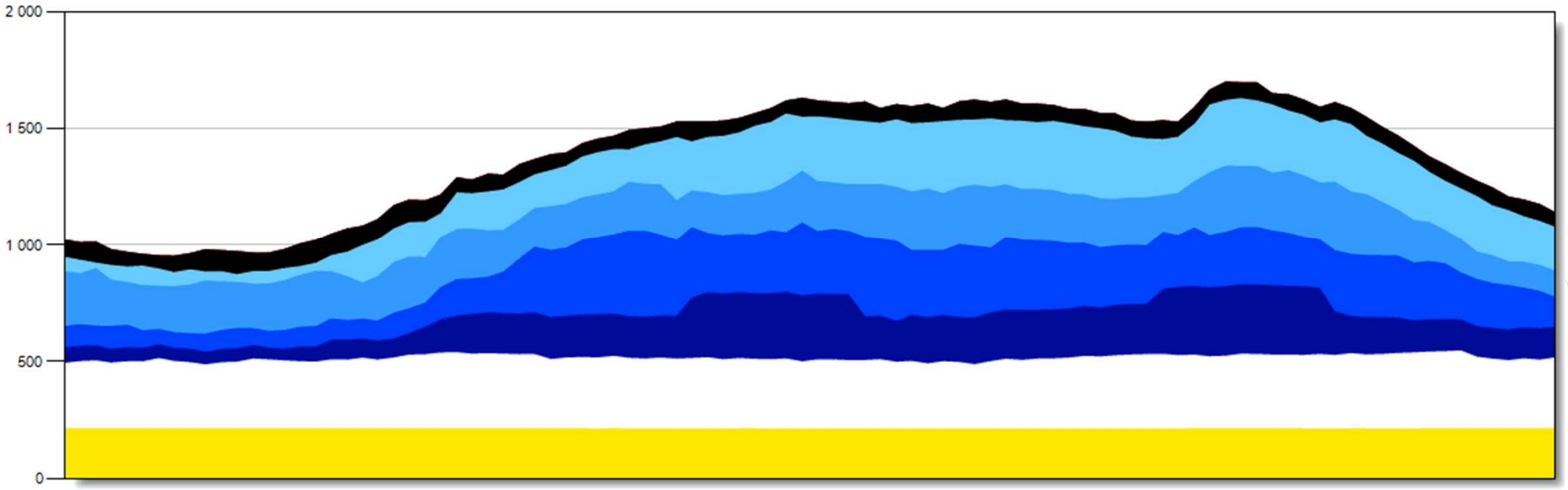
Costa Rican Electric Energy Mix



Costa Rican Electric Energy Mix



Daily Electric Demand (March 1st)



Geothermal	Wind	Private Hydro	Run of River	Hydro + Reservoir	ARDESA	International Trade

New Services

- De-carbonization of the economy
- Electric movility
- Digital services

PLAN DE DESCARBONIZACIÓN
COMPROMISO DEL GOBIERNO DEL BICENTENARIO

DESCARBONICEMOS
COSTA RICA
COMPROMISO PAÍS 2018-2050

Thank you

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