

A decorative border of various icons representing energy and environment, including sun, wind, water, and power symbols, surrounds the central text.

MONTHLY NRCE REPORT

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HIGHLIGHTS

During the last month, the energy sector has witnessed a series of milestones that reflect the hard work of both the National Energy Commission and the Ministry of Energy. The following are among the principal achievements:

First Solar Hackathon in Chile

The Solar Energy Industry Development Committee of CORFO (Solar Committee), with the Ministry of Energy, the National Energy Commission (CNE) and the Inter-American Development Bank (IDB), held on December 20th "Hackathon Solar: integrating information to promote knowledge", the first event of its kind in Chile.

The day brought together programmers and students under the challenge of developing a solution or software that would allow to visualize and promote Solar Energy as a competitive, safe, economical and sustainable alternative; all using the "Open Energy" platform of the CNE as a data source.

The winners were "Sisé Project" –from the Metropolitan Technological University– and "ProgCompCL" in the student's category and the start-up category, respectively; who received the award from the Minister of Energy, Andrés Rebolledo.

Both solutions will be part of "Enlace Solar", a knowledge management platform managed by the Ministry of Energy and the Solar Committee, within the framework of the CORFO Solar Energy Program, which was carried out thanks to the contribution of IADB.

Ministry of Energy and National Irrigation Commission give resources to NCRE irrigation projects

With a total of \$1.5 billion, in 2016 were subsidized 14 irrigation projects submitted by small agricultural producers, organizations and indigenous peoples, in the framework of the competition 14-2020 "NCRE and Micro-hydros" of Law No. 18,450 carried out after the signing of the agreement between the National Irrigation Commission and the Ministry of Energy.

The ERNC competition presented 39 irrigation projects supplied with renewable energy, mainly solar photovoltaic (PV) and mini-hydro in irrigation canals throughout the country.

These 14 projects will benefit 549 farmers in the regions of Antofagasta, Maule, Biobío and La Araucanía. Nine of these projects are solar (PV), with powers varying between 100kW and 1kW, and 5 correspond to micro-hydros, installed in the channel of irrigation channels, where 8 generation units will be concreted.

EnergíaMinistry of Energy delivers solar technology to inhabitants of the Atacama region

During his tour in the Atacama Region, the Minister of Energy, Andrés Rebolledo, delivered the first mobile solar refrigeration camera to the fishermen from "Caleta de Barranquilla", reaching a total investment of \$33,009,179.

In the region, he also initiated the operation of a photovoltaic solar plant in the "Pan de Azúcar" National Park, with an installed capacity of 38 kW –an investment amounts of \$ 198 million– through the Neighborhood Improvement Program Undersecretary of Regional Development and the Municipality of Chañaral. This first solar electric cooperative of Atacama will benefit with clean energy and the 24 hours of the day, the 22 families that live within the National Park and the workers of CONAF.

The Minister's tour ended with the implementation of a solar roof at the "Atacama Desert" aerodrome of the General Directorate of Civil Aeronautics (DGAC). Currently it generates 30% of the energy needed for its operation, through wind turbines. This project had an investment of \$67.5 million and is estimated to generate 76,321 kWh per year, which would reduce a total of 61 tons of CO2 equivalent per year of activity.

Convention on Climate Change is ratified by the Foreign Relations Committee

Ready to be checked by the Chamber, is now the draft of the Paris agreement, adopted at the 21st United Nations Framework Convention on Climate Change, was adopted on 12 December 2015.

This was after the members of the Foreign Relations Committee of the Senate approved the treaty on January 20th, which had already been ratified by the senators of the Committee on Environment and National Assets.

The text proposes to reduce the emission of greenhouse gases by 30% in 2030, to improve the position of Non-Conventional Renewable Energy (NCRE) in the energy matrix and to make energy efficiency as a stable public policy.

SUMMARY

This month, december 2016, were declared under construction 39 Non-Conventional Renewable Energy (NCRE) projects , according to Exempt Resolution N° 914/2016, released by the National Energy Commission (CNE), were specified the operation dates for the future projects, which goes between december 2016 and august 2018.

NCRE installed capacity, reaches up to 2,975 MW (14% of total installed nowadays). It's important to consider that most of this capacity (almost 89.4%) is connected to the Central Interconnected Energy Transmission System.

Furthermore, energy output from NCRE power plants during december was 985 GWh, equivalent to a 15.6% of the total energy generation in Chile. Regarding the legal requirements, that forces conventional generators to certify that a percentage of their generation comes from NCRE sources, the obligation of 245 GWh, was more than satisfied, with a total of 778 GWh declared by generators. If we break this number down, by technology, will get to 314 GWh coming from solar-pv power plants, 239 GWh from wind farms, 145 GWh from small hydro and the final 79 GWh came from biomass sources.

Finally, during december, the Environmental Evaluation Service (SEA) did not evaluate new NCRE projects but gave it permission by approving the Environmental Qualification Resolutions (RCA, in Spanish) to 6 projects (180 MW with a total of 787 MMUSD of investment).

Summary – NCRE Project Status

Technology	Operation (*) [MW]	Under Construction [MW]	RCA Approved [MW]	Under Evaluation [MW]
Biomass	459	0	449	87
Wind	1,029	208	8,564	2,223
Geothermal	0	48	120	50
Small Hydro	446	36	791	92
Solar - PV	1,041	1,238	14,058	5,159
Solar CSP	0	110	1,155	1,200
Total	2,975	1,640	25,135	8,811

Source: CNE., SEIA, CDEC-SIC / CDEC-SING.

(*) Only takes into account projects ready for commercial operation.

(**) Refers to hydro power centrals (run-of-river) with less than 20 MW of installed capacity.



CONTENTS

	Status of Renewable Energy Projects	5
	1. Electricity Generation Projects Under Construction	5
	2. Installed Capacity for Electricity Generation	5
	3. Electricity Generation	6
	4. Compliance with Laws 20,257 y 20,698	6
	Projects Under Environmental Evaluation	7
	1. New Projects on Environmental Evaluation	7
	2. Projects undergoing Environmental Evaluation	7
	3. Projects with Environmental Qualification Resolution	8
	Energy Geothermal Licenses	9
	1. Existing exploration concessions	9
	2. Existing exploitation concessions	9
	Distributed Energy Generation Law	10
	1. Facilities declared	10

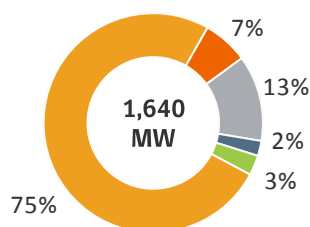


STATUS OF RENEWABLE ENERGY PROJECTS

1 Electricity Generation Projects Under Construction

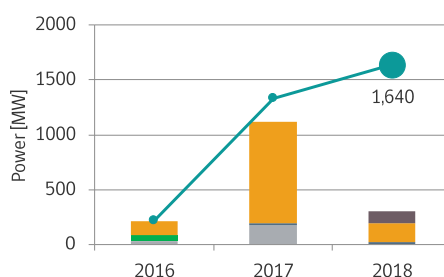
According to Exempt Resolution N° 914/2016, released by the National Energy Commission (CNE), that "Updates and Communicates Construction Projects", there are –in december, 2016– a total of 39 renewable energy projects under construction, reaching an amount of 1,640 MW of future installed capacity. These projects should be operating between december 2016 and august 2018.

NCRE Projects Under Construction

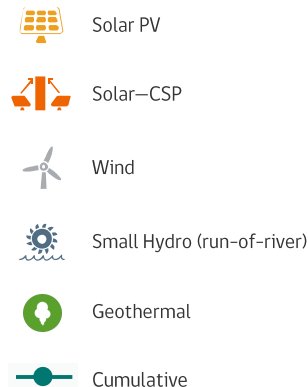


Source: CNE

Starting Operation Date Forecast



Source: CNE

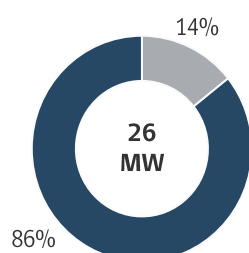
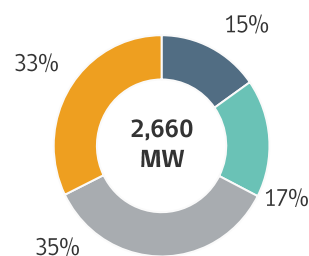
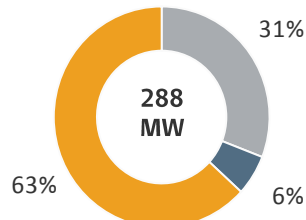
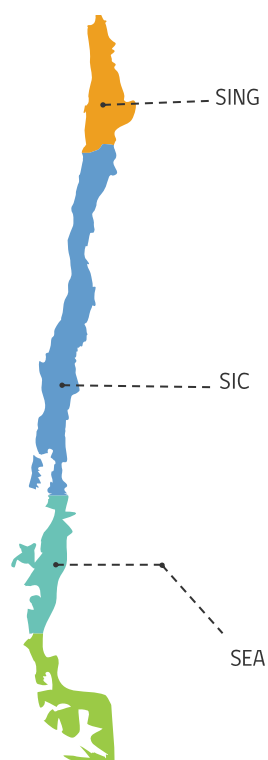


2 Installed Capacity for Electricity Generation

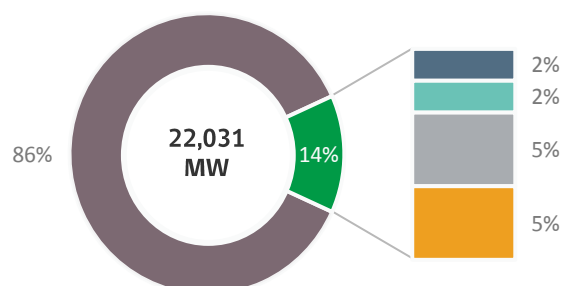
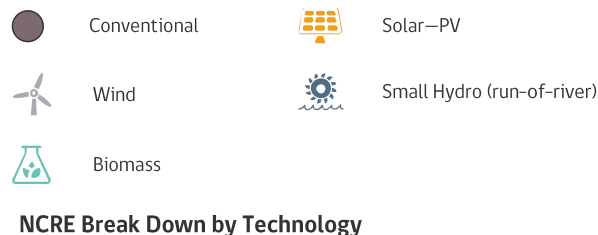
The NCRE installed capacity reaches—in december 2016– a total of 2,975 MW (1). By location, we can identify almost the 89.4% (2,660 MW) in the Central Energy System (SIC, in Spanish), 9.7% (288 MW) in the Northern Energy System (SING, in Spanish) and the remaining 0.9% (26 MW) comes from the Aysen Energy System (south of Chile).

NCRE installed capacity is almost 14% of the total.

NCRE Installed Capacity



Source: CDEC-SIC / CDEC-SING y CNE



(*) In addition to the installed capacity, there are 27 power plants in test phase –all synchronized with their own electric systems– reaching a total of 824 MW.

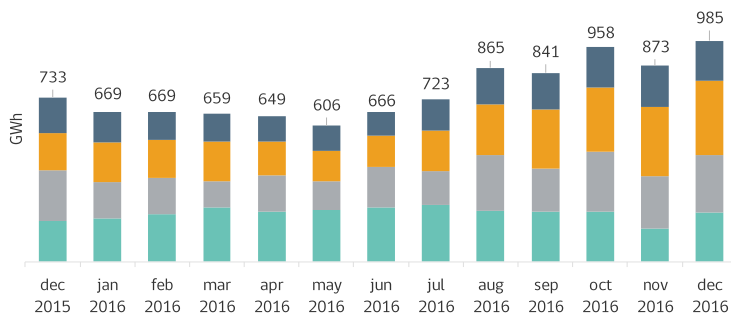
(1) The total installed capacity also includes Los Lagos (1 MW)

3 Gross Energy Generation

The energy generation of the largest electrical systems was 6,308 GWh during December 2016. Of this value, 985 GWh were produced by NCRE power plants.

If we break down by technology, we observed 33.6% (331 GWh) of solar resource, followed by wind source with the 25.9% (256 GWh) and the Small Hydro Power (run-of-river) with the 18.2% (179 GWh). Finally, the biomass source generate the 22.3% (219 GWh) of the total share.

NCRE Electricity Generation Evolution

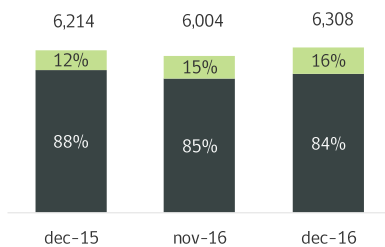


Electricity Generation Variation

Energy Generation [GWh]		Monthly		Annual	
Biomass	219	▲	48.1%	▲	20.3%
Wind	256	▲	9.5%	▲	13.4%
Solar - PV	331	▲	6.5%	▲	98.7%
Small Hydro	179	▼	-1.2%	▲	13.1%

Source: CDEC-SIC / CDEC-SING

Monthly and Yearly Variation of Gross Energy Production



Electricity Generation Variation by category

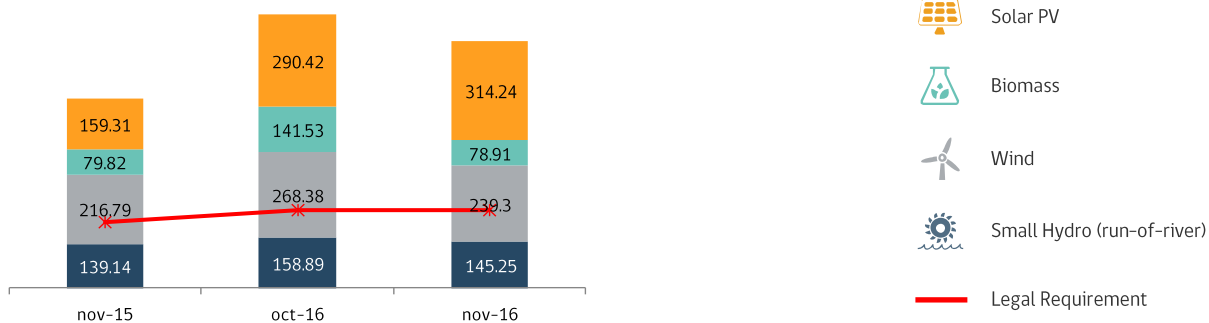
ENERGY SOURCE		Monthly		Annual	
Conventional	5,323	▲	3.8%	▼	-2.7%
NCRE	985	▲	12.8%	▲	32.5%
Total	6,308	▲	5.1%	▲	1.5%

Source: CDEC-SIC / CDEC-SING

4 Compliance of Laws No. 20,257 and No. 20,698

According to the ERNC balance released by the Independent System Operators, corresponding to november 2016, the obligation defined by Laws 20,257 and 20,698 was of 245 GWh –all from NCRE electricity generation sources-. During that period the amount of NCRE energy recognized under those laws, reached 778 GWh, (217.4% of the legal requirement). In this, we distinguish a total of 314 GWh from solar power, 239 GWh coming from wind, 145 GWh from small hydro power tech, and the remaining 79 GWh from biomass.

NCRE Technology Compliance Law



Source: CDEC-SIC / CDEC-SING



PROJECTS UNDER ENVIRONMENTAL EVALUATION

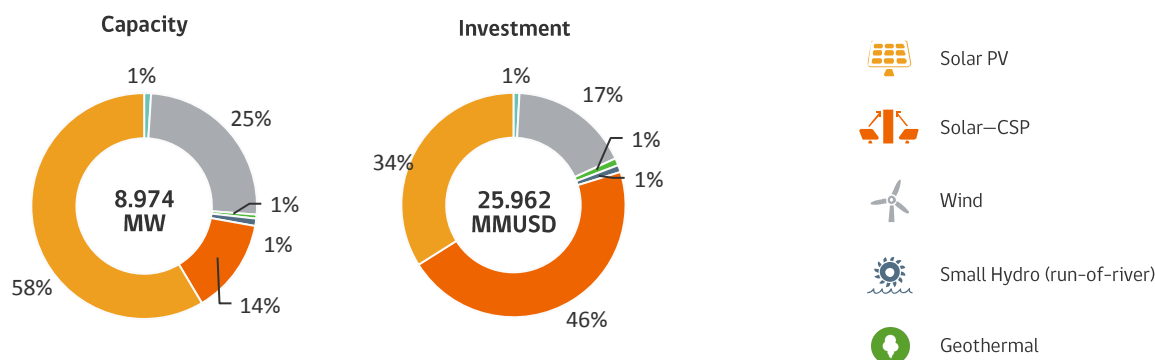
1 New Projects on Environmental Evaluation

In december, no new NCRE projects were registered.

2 Projects undergoing Environmental Evaluation

In december 2016, were registered 87 NCRE projects under qualification phase by the Environmental Evaluation Service (SEIA, in Spanish). Of these, there are 4 biomass projects, 23 wind farms, 1 geothermal power plant, 8 Small Hydro (run-of-river), 3 CSP solar power plants and 48 PV solar projects. In addition are 8,811 MW, reaching a total investment of 25,309 MMUSD.

NCRE Projects Distribution



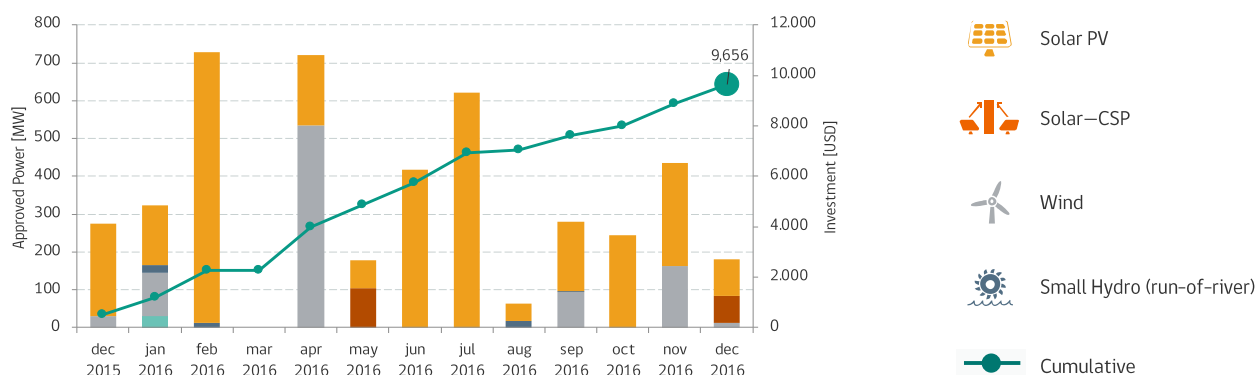
3 Projects with Environmental Qualification Resolution

During december, the Environmental Evaluation Service (SEA), gave 6 Environmental Qualification Resolutions (RCA, in Spanish) to NCRE projects, totalling 180 MW and an investment of 787 MMUSD. All of them are solar photovoltaic plants.

Technology	Region	Company	Project Name	Capacity [MW]	Investment [MMUSD]	Date	Web
Eólico	VIII	Parque Eólico El Nogal SpA.	Parque Eólico El Nogal	14	25	29/dic/2016	Ver
Solar - CSP	II	CEME1 SpA	Planta Solar CEME1	70	608	23/dic/2016	Ver
Solar - PV	VI	Cidón Solar	Parque Solar Mostazal	9	18	07/dic/2016	Ver
Solar - PV	III	ACCIONA ENERGÍA CHILE SpA	Planta Fotovoltaica Almeyda	60	101	23/dic/2016	Ver
Solar - PV	RM	CHESTER SOLAR IV SpA	Parque Solar PV - El Roble	18	15	20/dic/2016	Ver
Solar - PV	VII	CHESTER SOLAR VII SPA	El Paular - Comuna de Talca	9	20	19/dic/2016	Ver

In addition, the graph below shows the evolution of projects approved by SEIA during the last 12 months. Here it is noticed that the total value of the investment accumulated during this period is equal to 9,656 MMUSD, while the ERNC power capacity approved in total was 4,470 MW.

Evolution of NCRE Projects with Environmental Qualification Resolution approved





ENERGY GEOTHERMAL LICENSES

The Ministry of Energy is responsible for the administration of Law No. 19,657 appliance, which applies to Geothermal Energy Concessions and regulate the process and evaluations for geothermal energy concessions, requests for extension of exploration concessions and to enforce the law and its regulations.

A geothermal concession is an administrative act –granted by the State– where is authorized a natural or legal person to carry out exploration or exploitation of geothermal energy in a given area.

A geothermal exploration concession confers the right to conduct studies, measurements and other investigations to determine the existence of sources of geothermal resources, its physical and chemical characteristics, their geographical spread and their skills and conditions for its use, with a period of two years, renewable for two additional years.

A geothermal exploitation concession confers the right to use and exploit geothermal energy that exists within its boundaries, including: conducting drilling activities, construction, commissioning and operation of a geothermal power plant, with an indefinite term and covered by compliance with the obligations for the concessionaire in the concession decree and payment of an annual fee.

Below are the concessions Exploration and Exploitation of Geothermal Energy Ongoing until January 18th, 2016:

1 Existing Exploration Concessions

Concession	Owner	Region	Province	Commune	Area (ha)
CARCOTE	SERVILAND MINERGY S.A	ANTOFAGASTA	EL LOA	CALAMA-OLLAGÜE	99,000
CARITAYA	SERVILAND MINERGY S.A	ARICA Y PARINACOTA-TARAPACÁ	ARICA -DEL Tamarugal	CAMARONES-HUARA- CAMIÑA-COLCHANE	98,600
LASCAR	TRANSMARK CHILE SpA	ANTOFAGASTA	EL LOA	SAN PEDRO DE ATACAMA	24,000
LATARANI 1	ENERGÍA ANDINA S.A.	TARAPACÁ	DEL TAMARUGAL	COLCHANE-HUARA	1,000
LATARANI 2	ENERGÍA ANDINA S.A.	TARAPACÁ	DEL TAMARUGAL	COLCHANE	800
LINZOR	TRANSMARK CHILE SpA	ANTOFAGASTA	EL LOA	CALAMA	33,000
PUCHULDIZA 3	MRP CHILE EXPLORACIÓN LIMITADA	TARAPACÁ	DEL TAMARUGAL	COLCHANE	3,000
TIMALCHACA	SERVILAND MINERGY S.A	ARICA Y PARINACOTA	ARICA-PARINACOTA	ARICA-CAMARONES-PUTRE	68,000
EL VALLE	TRANSMARK CHILE SpA.	ARAUCANÍA	CAUTIN	PUCÓN-CURARREHUE	18,200
LLONQUEN	TRANSMARK CHILE SpA.	LOS RIOS	VALDIVIA	PANGUIPULLI	16,200
EL ENCUENTRO	EMPRESA GENERADORA EGENGEO S.A.	METROPOLITANA	CORDILLERA	SAN JOSE	15,600

Source: Ministry of Energy

2 Existing Exploitation Concessions

Concession	Owner	Region	Province	Commune	Area (ha)
APACHETA	GEOTERMICA DEL NORTE S.A	ANTOFAGASTA	EL LOA	OLLAGUE	8,100
CHILLAN	EMPRESA NACIONAL DE GEOTERMIA S.A	BIO BÍO	ÑUBLE	COIHUECO-PINTO	8,400
EL TATIO	GEOTERMICA DEL NORTE S.A	ANTOFAGASTA	EL LOA	CALAMA	4,160
LA TORTA	GEOTERMICA DEL NORTE S.A	ANTOFAGASTA	EL LOA	CALAMA-SAN PEDRO DE ATACAMA	5,400
LAGUNA DEL MAULE	COMPAÑÍA DE ENERGÍA LIMITADA ENERCO	DEL MAULE	TALCA-LINARES	SAN CLEMENTE-COLBUN	4,000
OLCA	COMPAÑÍA MINERA DOÑA INES DE COLLAHUASI SCM	TARAPACÁ	DEL TAMARUGAL-EL LOA	PICA-OLLAGÜE	2,500
PELLADO	COMPAÑÍA DE ENERGÍA SPA	DEL MAULE	TALCA-LINARES	SAN CLEMENTE-COLBUN	16,000
ROLLIZOS	SAMUEL SANTA CRUZ	DE LOS LAGOS	LLANQUIHUE	PUERTO VARAS	260
TINGUIRIRICA	ENERGÍA ANDINA S.A	DEL LIBERTADOR GENERAL BERNARDO O'HIGGINS	COLCHAGUA	SAN FERNANDO	6,175
TRINIDAD I	INVERSIONES PUYEHUE LIMITADA	LOS LAGOS	OSORNO	PUYEHUE	315
TRINIDAD II	INVERSIONES PUYEHUE LIMITADA	LOS LAGOS	OSORNO	PUYEHUE	243
TRINIDAD III	INVERSIONES PUYEHUE LIMITADA	LOS LAGOS	OSORNO	PUYEHUE	40

Source: Ministry of Energy



DISTRIBUTED ENERGY GENERATION LAW

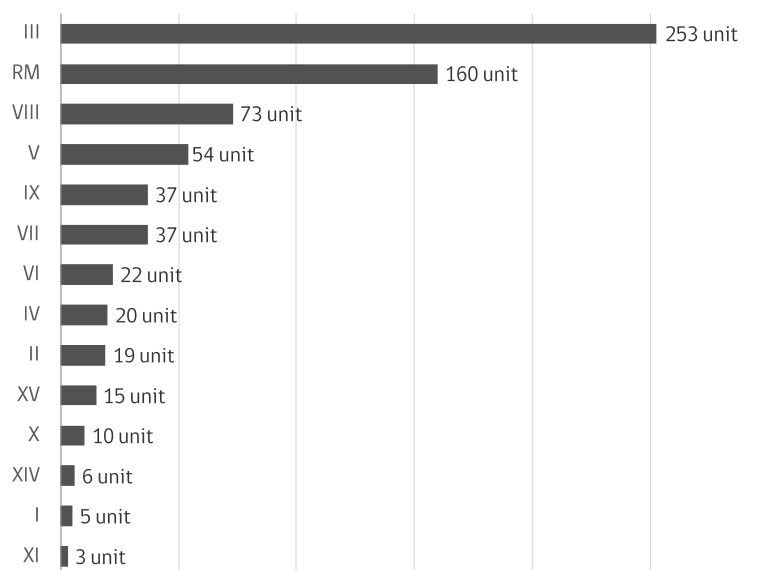
Energy generation by the citizen is established by Law No. 20,571, is a system that allows the self-generation of energy based on Non-Conventional Renewable Energy (NCRE) and efficient cogeneration. This law, also known as Net Billing, Net metering or distributed energy generation, delivers the permission to energy customers to become energy generators by selling their generation directly to the electricity distributor at a regulated price, which is published on the website of each distributor.

All power generation system which would like to generate energy under this regulation, must declared to the Superintendency of Electricity and Fuels (SEC in Spanish) its installations. This declaration must be made by an authorized installer, and must also contain the technical details of the installation and use of products. Subsequently, the SEC will oversees the installation and only if it fulfils the technical requirements will authorized its operation. Hereafter the owner must notify the network connection to the electricity distribution company.

Down below the list of facilities declared to the SEC by the electric procedure No. 4 december 2016.

1 Facilities declared

Number of facilities declared by region



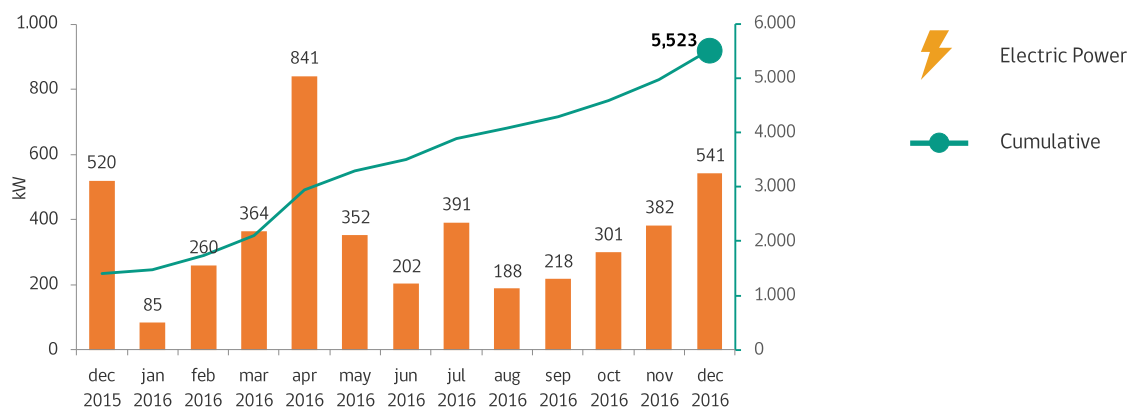
Source: SEC

Detail of facilities declared by region

Region	Total [units]	Power [kW]
III	253	542
RM	160	1,797
VIII	73	364
V	54	601
IX	37	218
VII	37	746
VI	22	322
IV	20	513
II	19	85
XV	15	116
X	10	97
XIV	6	8
I	5	107
XI	3	8
Total	714	5,523

Source: SEC

Declared capacity evolution in the last 12 months



Source: SEC

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