New and Renewable Energy Deployment Programs and Statistics of Korea

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ABSTRACT

New and Renewable Energy(NRE) of Korea took 5.18 %(preliminary) of total primary energy supply(TPES) in 2017. The NRE portion of the TPES is continuously increased with the help of the government's deployment program. New and Renewable Energy Center(NREC) of Korea Energy Agency(KEA) is an organization responsible for deployment of new and renewable energy in Korea. NREC has operated various scheme for subsidy programs. About 14 thousands geothermal households were deployed by the end of 2017. More than 4 thousands private buildings with geothermal system were subsidized. In case of the public buildings more than 1 GW capacity of the geothermal systems were deployed by the end of 2017.

Keywords: NRE, TPES, NREC, KEA, subsidy program

1. Introduction

The deployment of renewable energy is expected to have not only greenhouse gas emissions mitigation but also economic impacts such as economic growth, job creation and social welfare. Thus many countries including Korea have been making effort on various supports. Korean government recently announced new renewable 3020 implementation plan to achieve 20% renewable power in energy mix by 2030. New and Renewable Energy Center(NREC) of Korea Energy Agency(KEA) is specialized in policies and regulations for deployment of new and renewable energy. NREC has operated various scheme for subsidy programs including Home and Building Subsidy Programs and Mandatory Scheme such as Renewable Portfolio Standard(RPS), Renewable Fuel Standard(RFS) and NRE Mandatory for Public Buildings. In this article, deployment programs and statistics of NRE in Korea are briefly introduced.

2. New & Renewable Energy Statistics of Korea

As of the end of 2017, NRE supply was 15,608 ktoe which takes 5.18% of total primary energy supply(TPES). As of the end of 2017, installed NRE generation capacity was 15,702 MW, which takes 13.2% of total generation capacity. As of the end of 2017, NRE power generation was 46,619 GWh which takes 8.07% of total power generation.

Table. 1 NRE ratios of TPES

year	2010	2011	2012	2013	2014	2015	2016	2017
ratio(%)	2.60	2.74	3.18	3.52	4.08	4.62	4.81	5.18

3. PRS and RFS scheme

RPS is a system that places an obligation to power suppliers with a capacity of more than 500 MW to produce certain amount of power from NRE electricity. In 2018, more than 5% of the power should be supplied by the NRE. The proportion of the NRE supply increases year by year. RFS enforces renewable fuel blend obligators to supply certain amount of total transport fuel(diesel) with renewable(biodiesel) in order to expand NRE deployment. The biodiesel mixed in the diesel should exceed 3% in 2018.

4. Home Subsidy Program

Certain amount of total installation costs of NRE facilities such as solar PV, solar thermal, geothermal etc. to households was subsidized. 293,672 households including 13,917 geothermal were subsidized. Total capacity of the geothermal system is about 193 thousands kW.

Table. 2 statistics of home subsidy program

year	~ 2012	2013	2014	2015	2016	2017	total
# of households	161,642	31,658	14,304	15,665	27,448	42,955	293,672
# of geothermal house	3,946	1,875	1,960	1,745	1,426	2,965	13,917
geothermal capacity(kW)	57,283	32,770	34,244	30,304	24,731	13,775	193,107

5. Building Subsidy Program

NREC subsidizes a certain amount of total installation cost of NRE facilities in private buildings to accelerate NRE deployment new technologies by creating and expanding an initial market. More than 4 thousands private buildings got the benefit and 309 geothermal buildings with 124,237 kW capacity were subsidized.

Table. 3 statistics of private building subsidy program

year	~ 2012	2013	2014	2015	2016	2017	total
# of buildings	1,933	412	637	457	534	457	4,430
# of geothermal house	190	38	30	22	16	13	309
geothermal capacity(kW)	86,067	10,935	8,533	7,657	6,026	5,019	124,237

6. NRE Mandatory Use for Public Buildings

New, extended or renovated public buildings with the floor area of 1,000m^2 or above are obliged to fulfil mandatory rate of their total expected energy usage with NRE. In 2018, more than 24% of the energy should be supplied by the NRE. The proportion of the NRE supply increases year by year and the portion of the NRE in the public buildings will be increased 30% from 2020. Total capacity of geothermal system of the public building is over 1GW at the end of the year 2017.

Table. 4 statistics of mandatory use for public buildings

year	~ 2012	2013	2014	2015	2016	2017	total
geothermal capacity(kW)	487,991	134,553	98,313	112,537	111,078	92,182	1,036,653

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