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One Less Nuclear Power Plant, Phase 2

Tuesday, 10 June 2014

Climate & Environment Headquarters,
Seoul Metropolitan Government

Contents

I One Less Nuclear Power Plant, Phase 1

To cope with the energy crisis and climate change across the world, the Seoul Metropolitan Government (SMG) launched the "One Less Nuclear Plant, Phase 1" initiative in April 2012 and fulfilled its goal in June 2014, six months ahead of schedule.

1 "One Less Nuclear Power Plant": Seoul's Regional Energy Policy

1 Policy Background

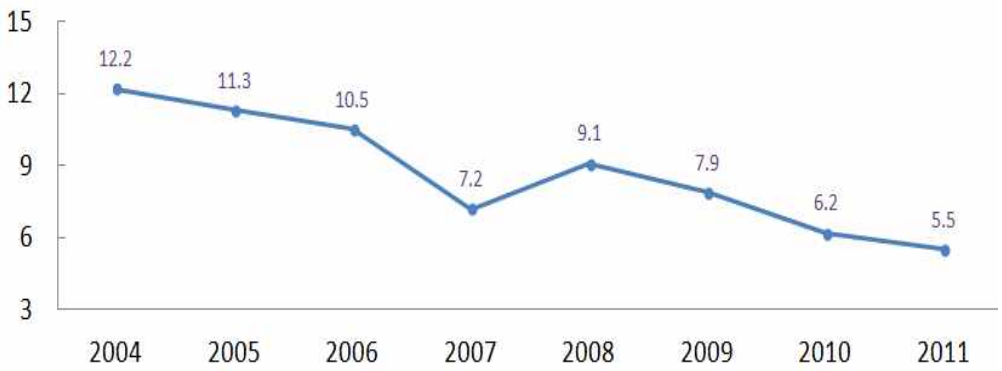
① Imminent energy crisis including the national blackout on 09/15/2011

In 2011, the electricity self-sufficiency rate of Seoul was a mere 2.8%, whereas its energy consumption accounted for 10.9% of the nation's total energy consumption. The city's energy consumption was on the rise, marking a 12% increase between 2006 (41,824GWh) and 2011 (46,903GWh).

Seoul's reserve margin dropped from 12.2% in 2004 to 5.5% in 2011. On 15 September 2011, a large-scale blackout occurred in many parts of the country including Seoul. Since then, Korea has never been free of worries of power outage. Seoul felt a strong urge to raise its energy self-sufficiency rate.

If it improves its energy self-sufficiency rate, Seoul can secure the ability to cope much more effectively with situations like the rolling blackout imposed on it in September 2011. To ensure that its basic urban infrastructure is functional under all circumstances, Seoul needs to reduce its electricity consumption and increase its production of new and renewable energy.

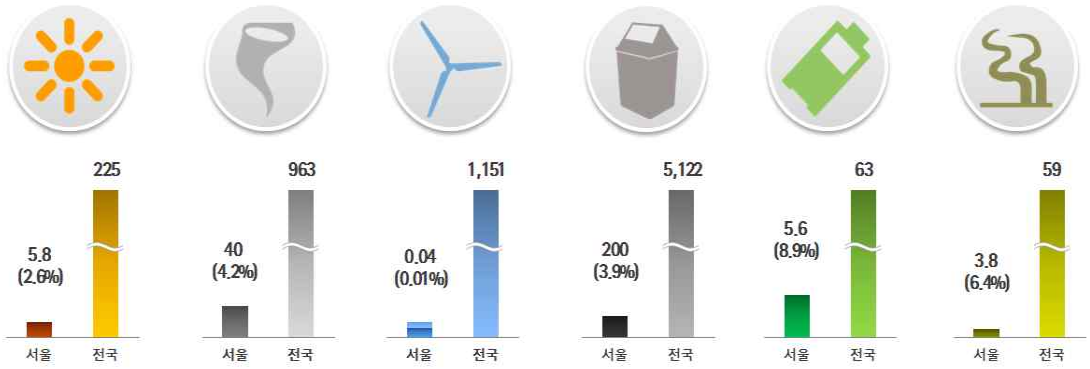
<Changes in Reserve Margins for Seoul>



② Necessity of Expanding Renewable Energy Production to Cope with Climate Change

In 2011, Seoul produced 250,000 TOE of new and renewable energy or 1.6% of its total energy consumption; which was much lower than the national average of 2.7% and the rates of Japan (4.7%) and USA (8.1%).

Most notably, 95% of the renewable energy came from waste-based biogas, with only 2% produced from photovoltaic panels and solar thermal energy systems. Seoul badly needed to increase the proportion of new and renewable energy in its energy portfolio to prove its strong commitment to counter global warming.



[solar] [bio] [wind] [waste] [fuel cell] [geothermal]

③ Practical Alternatives Required in the wake of the Fukushima Nuclear Disaster

The Fukushima nuclear accident triggered stronger opposition to nuclear power plants due to worries of radiation damage across the world, with Germany vowing to shut down all of its nuclear power plants and a number of other countries abandoning their nuclear power plans.

In 2011, Korea produced 31% of its electricity (496,893GWh) from nuclear power plants while pursuing ambitious expansions of its nuclear power capacities when nuclear power proved to be dangerous and radioactive wastes just kept accumulating. SMG was faced with the challenge of finding practical alternatives.

④ Enhanced Necessity of Managing Energy Demand amid Rising Oil Prices

Korea's dependence on oil imports reached 96% in 2012 when average crude oil prices were at historically high levels for the second year in a row. Energy demand management emerged as a compelling issue for SMG.

2 Overview and Progress of One Less Nuclear Power Plant, Phase 1

① Announcement of the "Comprehensive Plan for One Less Nuclear Power Plant"

On 26 April 2012, SMG announced the Comprehensive Plan for One Less Nuclear Power Plant, a practical yet future generation-oriented regional energy policy taking into account the characteristics of the city's localities and energy supply and demand.

The comprehensive energy plan was aimed at breaking the city's pattern of increasing energy consumption and reducing its energy consumption by 2 million TOE – equivalent to the amount of electricity produced by an average nuclear power plant in Korea – by the end of 2014 through the production of new and renewable energy and introduction of new energy efficiency and conservation measures.

Specifically, the plan encompassed six areas: expanded production of new and renewable energy; building retrofit program (BRP); establishment of environment-friendly, high-efficiency transportation system; job creation in the energy industry; shift to a low-energy, urban spatial structure, and; creation of a civic culture promoting energy conservation. The 6 areas were divided into 23 policy tasks and 71 programs.

The budget for the three-year comprehensive plan was KRW 2.78 trillion: KRW 414 from SMG, KRW 184.5 from the central government, and KRW 1.18 trillion from the private sector. At least 89% was spent on new and renewable energy, and 6%, on BRP.

Once completed, the plan is expected to yield import-substitution effects of around 1,560 barrels of crude oil or approximately KRW 2.08 trillion each year starting 2014. The annual substitution of crude oil also translates into reduction of 7.22 million tons of greenhouse gas or creation of forest over an area of 7,330 square kilometers, thereby helping ease global warming.

② Policy Establishment and Implementation through Citizen Engagement

Diverse citizens' groups have participated in the establishment and implementation procedures of the One Less Nuclear Power Plant initiative. From January to April 2012, SMG held 16 meetings with the Hope Policy Council and representatives of various civic groups to finalize a draft of the comprehensive plan. On 21 February 2012, it held a Public Opinion Listening Workshop with citizens to listen to their views regarding the directions of the plan. Finally, SMG held a Grand Civic Conference on 16 April 2012 to reflect citizens' evaluation of the details of the plan on the final version of the plan.

Civic engagement is also crucial for the successful implementation of the One Less Nuclear Power Plant initiative. SMG formed the "Citizens' Council for One Less Nuclear Power Plant" and "Implementation Council for One Less Nuclear Power Plant" in April 2012 with representatives in a wide range of fields such as environment, energy, business, religion, and education in an effort to promote joint governance between the public and private sectors in the energy sector.

The implementation council consists of four subcommittees in the professional areas of energy production, energy conservation, energy efficiency, and communication with citizens. For the past two years, it has held 13 general meetings and 28 subcommittee meetings to implement the initiative successfully and achieve its goal ahead of schedule.

Grand Civic Conference in session

Implementation Council for One Less Nuclear Power Plant

Implementation Council in session

SMG enhanced its organization to promote the initiative more effectively. It established the One Less Nuclear Power Plant Promotion Division composed of the One Less Nuclear Power Plant Overall Control Team and Energy Cooperation with Citizens Team to promote citizens' participation in the initiative. The Environmental Policy Division and Green Energy Division fully cooperated with the division to prepare and implement various policies related to the initiative.

In July 2012, SMG had the "Seoul Metropolitan Government Energy Ordinance" amended to secure the institutional foundation for the establishment of the Citizens' Council for One Less Nuclear Power Plant and the promotion of the initiative. It also commissioned the Seoul Institute for the establishment of a system for measuring and evaluating the results of the initiative. In an effort to boost civic engagement, SMG has provided incentives to citizens, civic groups, and businesses for their contributions to the initiative, signed 60 MoUs with various businesses and civic groups, and launched more than 100 public contests related to the initiative.



[Execution of MoUs with civic groups and businesses]

2 Performance Results

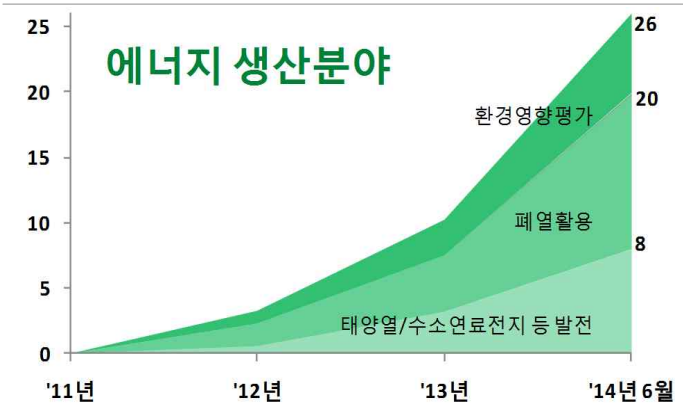
1 Achievement of 2 Million TOE Goal in the first half of 2014

SMG surpassed its 2 million TOE goal for the One Less Nuclear Power Plant initiative by the end of 2014, recording 2.04 million TOE in the first half of 2014.

(unit: 10,000 TOE, as of June, 2014)

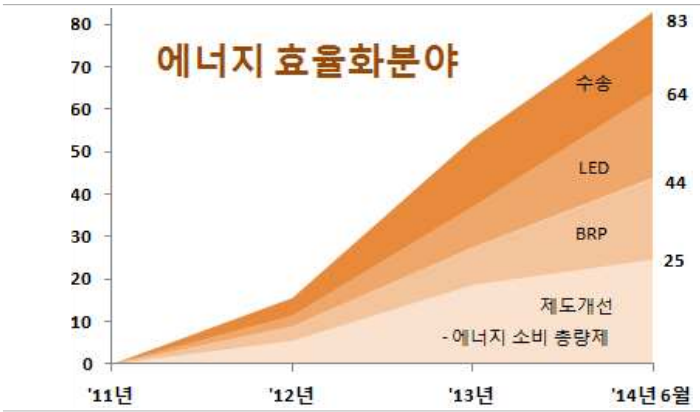
Sector	Goal	Total	2014 performance	Total by end of 2013
Total	200	204	70	134
Energy production	23	26	16	10
Efficient use	82	83	30	53
Energy saving	95	95	24	71

Through energy production, SMG posted 258,398 TOE – 79,576 TOE by securing decentralized energy sources such as PV panels, 119,192 TOE through the recovery of wastewater heat, and 60,528 TOE from the environmental impact assessment of new buildings.



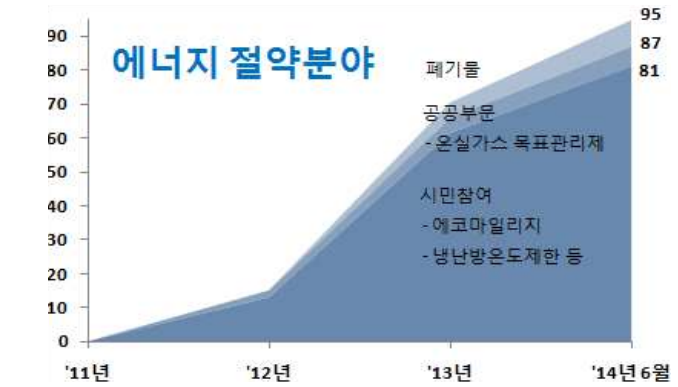
Energy Production	258,398
Generation (solar, hydrogen fuel cell, etc.)	79,576
Waste heat (wastewater, incineration, etc.) Geothermal energy Regenerative energy	119,192
Environmental impact assessment	60,538

Through efficient use of energy, SMG recorded reduction of 827,898 TOE: 246,972 TOE through the energy consumption cap for new buildings; 191,123 TOE through BRP; 199,598 TOE through LED replacement, and; 190,205 TOE through eco-friendly transportation.



Efficient use of energy	827,898
Energy consumption cap	246,972
BRP	191,123
LED	199,598
Transportation	190,205

SMG realized total reduction of 947,290 TOE thanks to citizens' active participation in energy conservation efforts: 810,607 TOE through the Eco-Mileage program, indoor temperature control, etc.; 55,302 TOE through energy saving in the public sector, and; 82,822 TOE through recycling.



Energy saving	947,290
Eco-Mileage, indoor temperature control, etc.	810,607
Energy saving in the public sector	55,302
Recycling	82,822

2 Major Accomplishments of Phase 1

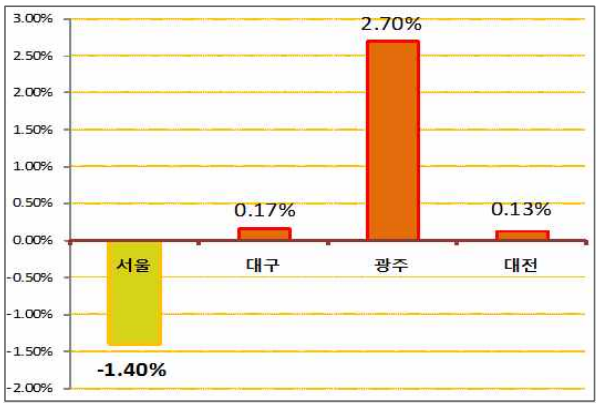
The accomplishments of One Less Nuclear Power Plant, Phase 1 – made through the production of new and renewable energy and conservation of energy – can be confirmed by the reduction of the city's energy consumption. Since 2012 when SMG launched the One Less Nuclear Power Plant initiative, the city has shown changes in its consumption of electricity, gas, and petroleum and registered reductions in 2013 as follows:

When the national electricity consumption registered a 1.7% increase, electricity consumption in Seoul dropped by 1.4% to 46,555 GWh in 2013 compared to 2012. Given the fact that Daegu and some other big cities in Korea with the same socioeconomic structure as that of Seoul recorded increases in electricity consumption, the city's reduction of electricity consumption was quite impressive.

Changes in Total Electricity Consumption in 2013 vs. 2012

Cities	2012 (GWh)	2013 (GWh)	Changes ('12→'13)
Nation	466,593	474,849	1.76%
Seoul	47,234	46,555	**-1.4%**
Daegu	14,955	15,080	0.8%
Gwangju	8,131	8,274	1.8%
Daejeon	9,160	9,225	0.7%

Consumption by Households and Offices in '13 vs. '12



The consumption of natural gas dropped by 3.54% in 2013 in Seoul, whereas the national average increased by 1.43%. The decline was largely due to the fact that many citizens changed the energy source for their cooking and heating devices from natural gas to electricity. Seoul registered a higher reduction rate than any other big city in the country like Gwangju and Daejeon. In terms of petroleum usage, Seoul posted a 1.7% reduction in 2013, whereas the national average increased by 2.9%; all other big cities in the country recorded significant increases as well.

Changes in Natural Gas Consumption in 2013 vs. 2012	Nation	1.43%	Changes in Petroleum Consumption (gasoline, diesel, and kerosene) in 2013 vs. 2012	Nation	2.9%
	Seoul	**- 3.54%**		Seoul	**- 1.7%**
	Daegu	0.45		Daegu	6.1
	Gwangju	-1.5		Gwangju	4.2
	Daejeon	-3.2		Daejeon	5.3

Such significant changes in the city's energy consumption pattern in 2013 were attributable to the launch of the One Less Nuclear Power Plant initiative in 2012. Between 2011 and 2014, photovoltaic power generation capacity increased by 228% from 22.8MW to 52MW; the number of buildings implementing the building retrofit project (BRP) soared from 475 to 2,267, and LED replacement skyrocketed from 200,000 to 6.79 million lights. During the same period, memberships in the Eco-Mileage program more than tripled from around 500,000 to 1.68 million.

3 Major Accomplishments by Sector

1 Laying the Groundwork for Solar Power-Centered Production of New and Renewable Energy

To expand its production of new and renewable energy, SMG attracted KRW 500 billion from the private sector to invest in the production of clean new and renewable energy for 300,000 households. As of June 2014, SMG has invested KRW 240.5 billion in 3,312 (52MW) solar power stations as well as a total of 61MW fuel cell stations.

PV Power Plants	Power Generation Biz Licenses	Fuel Cell Stations	Private Investment	Recycling of Unused Energy
3,312 stations (52MW)	20 ⇨ 160 locations	61MW	₩240.6B solar ₩300B fuel cell	Wastewater heat, small-scale hydro power, sludge, waste heat, etc.

① Expansion of PV Power Plants through Various Support Measures including Seoul-type FIT

SMG has installed 28 PV power plants (18MW) in the municipal facilities including the Seonam Sewage Treatment Center and Amsa Arisu Water Purification Center with a KRW 240.5 billion investment from the private sector. SMG also earns KRW 450 million from the lease of its unused land for the installation of PV power plants.

Gwangam Water Purification Center (810kW), Jan. 2014

Dobong Car Depot (700kW), Jan. 2014

Guro Digital (100kW), Jan. 2014

Seonam Sewage Treatment Center (2,995kW), Feb. 2014

SMG has also enhanced its administrative and institutional support measures to expand the small-scale PV power plants run by citizens. It has offered municipal land to four cooperatives for the installation of PV power stations. It has also shortened the period required to obtain a license for a PV power plant from 60 to 30 days. In addition, SMG provides loans for a PV power plant with capacity of 150kW or smaller at a preferential annual interest rate of 1.75%. Through the Seoul-type FIT (Feed in Tariff), it supports KRW 50 per kilowatt produced by a PV power plant. It also helps with the sales of REC (renewable energy certificate) through MoUs with PV plant operators. Through either direct investments or subsidy payments, SMG has expanded the installation of PV power plants in schools to 117 locations including Gangbuk Samgaksan High School, which save KRW 10 million in electricity bills a year.

② Construction of 61MW Fuel Cell Power Plants Generating Both Electricity and Heat

To help secure energy sources required to run the city's basic infrastructure, SMG has promoted the construction of fuel cell power plants using hydrogen as fuel as a decentralized energy system. Through an MoU with Korea Hydro & Nuclear Power Co., Ltd. in 2012, it attracted KRW 300 billion in investments from the private sector. In February 2014, SMG broke ground for the construction of a 20MW fuel cell power plant at the Godeok Car Depot. In June 2014, it received approval for the construction of another 20MW fuel cell power plant at Noeul Park. SMG plans to begin construction of fuel cell power plants at the Seonam Sewage Treatment Center and Sinnae and Dobong Car Depots in the second half of 2014 to supply power and heat to 225,000 and 45,000 households, respectively.

③ Using Heat from Incineration and Wastewater Treatment as New Energy Sources

To help reduce citizens' heating costs in winter, SMG has arranged for neighboring local governments to supply heat from their incineration and power generation to Seoul at low prices. It signed an MoU with the Euijeongbu City in March 2012, laid heat pipes, and began to be provided with 60,000 Gcal (6,000 TOE) of heat from the city's incineration facility for the Nowon District on December 1, 2012. It signed a basic agreement with Bucheon City in February 2014 regarding the supply of 470,000 Gcal of heat from the city's incineration facility to Seoul; this was followed by the execution of an MoU between the two cities in June 2014. Meanwhile, the temperature of wastewater

treatment effluent remains at 10℃ in winter, so it can be an excellent energy source for district heating. SMG has recovered 190,000 Gcal of heat energy from the effluent of the Tancheon Sewage Treatment Center. It is installing the facilities required to recover 150,000 Gcal of wastewater heat from the Seonam Sewage Treatment Center. Currently, a total of 15,000 households in apartment complexes receive heating service through such arrangement; the KRW 35 billion facility investment from the private sector contributed to the revitalization of the local economies concerned. In 2012, for the first time in Korea, SMG built a 360kW small-scale hydro plant at the Noryangjin Distributing Reservoir using the 2.4m altitude difference in water pipes, and it is supplying power to 500 households. In May 2014, it began building another micro hydro system (460kW) at the Seonam Sewage Treatment Center.

④ Development of Uncharted Niche Energy Sources

SMG has promoted a project designed to use biogas – which used to be burnt away or to raise temperatures in digestion tanks – as fuel for cogeneration plants. In March 2013, the Nanji Sewage Treatment Center began operating a 3.1MW biogas-based cogeneration plant for the first time in Korea. The sewage treatment center supplies 26,000m^3/day of biogas produced during its sewage treatment processes to Korea District Heating Corporation, which uses the gas to produce 20,000 MWh of electricity and 24,000 Gcal of heat for 8,000 households each year. The Jungryang Sewage Treatment Center produces 5.98 million cubic meters of digestion gas a year and sells it as natural gas. KRW 7.8 billion was invested by the private sector to complete the project. SMG has supplied eco-friendly wood pellet to 40 social welfare facilities to help with their heating needs in winter. In May 2014, SMG launched a pilot project for wind-powered street lamps. It is recycling 5.5 tons/day of waste cooking oil throughout the year.

2 Pioneering Efficient Use of Energy through BRP and LED Projects

SMG has expanded its BRP from office buildings to residential buildings, provided low-interest BRP loans, and promoted ESCO (Energy Service Company) projects to enable building owners to improve energy efficiency sans immediate financial burdens. It has completed the replacement of lights at its numerous subway stations with LED lamps, facilitating the growth of the nascent LED industry in the country's public sector, followed by rapid industrial expansion into the private sector.

Social Welfare Facilities BRP	Building BRP	Subway Station LED Replacement	BRP Loans	LED Lights Installed
59 places	2,267 places	100% (430,000 at 243 places)	₩54.9 billion at 1.75%/y	6.79 million

① Low-Interest BRP Loans and Promotion of BRP through Public-Private Partnership

Taking the lead in the promotion of BRP, SMG has implemented BRP for 59 social welfare facilities and 116 schools. In May 2014, it installed an Energy Eco-house (a low-energy house) in Seoul Plaza – where citizens can experience BRP technologies – through investment by the private sector. For 424 facilities consuming a huge amount of energy, SMG analyzed their energy consumption patterns, disclosed their positive BRP efforts to the public, and attempted to motivate them to make continuous improvements in their BRP through various measures. In addition, SMG offered KRW 54.9 billion in BRP loans for 19,687 locations while simplifying the BRP loan application procedures considerably. In the first half of 2013, SMG lowered the interest rate of BRP loans from 2.5% to 2% per year. It further reduced the rate to 1.75% at the end of 2013. In August 2013, it included energy service companies in the category of businesses eligible for the preferential BRP loan benefit. In April 2014, it increased the maximum loan amount from 80% to 100% of the applicable facility costs. Through MoUs with various businesses and civic organizations, SMG has increased civic cooperation and participation in BRP while reducing the city's BRP execution costs. For instance, SMG signed MoUs with construction material suppliers like LG Hausys and Eagon Corporation in 2013 and had them supply their insulated windows to the citizens at 20% lower prices, with the city government guaranteeing the product quality and after-sales services. Citizens have shown enthusiastic response to the arrangement.

Pilot Project for Energy-Efficient Apt. Complex	+	Agreement on Window Price Reductions	+	Promotion of Region-specific BRP	+	Hospital BRP
MoU with Daelim I&S (Feb. 2013)		Five companies including LG (Feb. 2013)		G-Valley Industry Association (Jul. 2013)		30 hospitals including Yeouido St. Mary's Hospital

② Creation of the LED Market in the Private Sector through Leadership in the Public Sector

In 2013, SMG launched a project to replace all the lights for its 243 subway stations and numerous subway cars with eco-friendly LED lights in two phases. The first phase, which saw a total of 430,000 lights at the stations replaced with LED lamps, was completed in May 2014. The second phase – which is underway – is aimed at replacing a total of 220,000 lights in all of its subway cars with LED lamps as soon as possible. Funding was provided entirely by Korea Finance Corporation, a public financial institution, through an MoU executed in April 2013. The project was a new model for the partnership between a local government and a public institution under the control of the central government in the area of expansion of LED lights in the public sector.

On top of that, SMG has had a total of 1.4 million LED lights installed in the parking lots of 400 apartment complexes through an ESCO arrangement. For instance, the ESCO project for the Doosan Apartment Complex in Seokgwan-dong invested KRW 140 million to replace the lights in its underground garage with LED lamps and fully recovered its investment within two years. Through various ESCO projects, SMG has arranged the replacement of 5.6 million lights in saunas, fitness centers, and restaurants with LED lamps. It has also launched LED lamp markets in the city's 40 major apartment complexes for manufacturers to meet customers face to face.

3 Major Achievements in Energy Conservation through Citizen Engagement

① Fostering a Voluntary Energy Saving Culture through "Eco-Mileage"

SMG has implemented the eco-mileage system since 2009 to promote energy conservation in the household and commercial sectors, which account for 57% of the city's energy consumption. The system is a civic engagement program wherein SMG offers citizens incentives for reducing their energy consumption in terms of electricity, natural gas, water, or district heating.

Mileage membership has steadily increased but doubled in 2013 to more than a million. As of June 2014, 1.68 million citizens are taking part in the program as members. The members' efforts have led to the conservation of 500,000 TOE of energy – equivalent to the reduction of 680,000 tons of CO2 emissions – as of June 2014.

Description	2012	2013	June 2014
Membership (accumulating)	690,000	1,400,000	1,680,000
Energy Savings (TOE)	100,000	150,000	190,000

② Energy Conservation in Transportation through Reduced Driving Necessity and Improved Pedestrian Environments

To reduce the necessity to drive, SMG launched the car sharing service in 2013. As of June 2014, the service has secured 1,070 cars for a total of 150,000 members. In January 2014, SMG designated an exclusive public transport zone in Sinchon. It is running 18km of car-free streets. To promote environment-friendly driving practices, SMG has offered education on eco-friendly driving to more than 10,000 bus drivers and has distributed 2,700 eco-friendly, economical driving gadgets to them.

③ Operation of Energy Conservation Programs with Citizens' Active Participation

To reduce the consumption of the same amount of electricity generated by a nuclear power plant, civic engagement was crucial. SMG developed diverse programs to motivate citizens to take part actively in the initiative, such as Energy Clinic Service, Energy Guardian Angels Corps, Energy-Saving Model Shops, and Happy Turn-Off Hour. For the Energy Clinic Service, energy experts visit citizens' homes, perform diagnosis of their increasing energy consumption particularly due to their use of larger home appliances, and offer them customized counseling on how to reduce their energy consumption. As of 2013, 20,255 households have received the service per year, recording an average reduction of 6% in their electricity consumption on an annual basis.
In July 2012, SMG launched the Energy Guardian Angels Corps for energy conservation at home and school. The corps consists of fourth ~ tenth graders who are active in implementing energy conservation as the city's future leaders in energy conservation. In 2013, 22,152 students from 526 schools joined the corps – which was more than the targeted number of students (20,000) – and contributed to an overall reduction of 3.6% in energy consumption in those schools throughout the year compared to 2012. SMG also launched Energy-Saving Model Shops in 2013. A total of 5,000 shops including coffee -

shops, bakeries, hair salons, and restaurants joined the initiative during the year and reduced their annual energy consumption by an average of 9.9% through various measures including unplugging appliances and turning off the signage lighting. While energy consumption in summer and winter used to be distinctly higher than during the rest of the year, recent energy consumption in Seoul tends to rise throughout the year for various reasons. In an attempt to raise awareness of the importance of energy conservation among the citizenry, SMG launched the "Happy Turn-off Hour" wherein citizens turn off the lights for an hour between 8 and 9 pm every 22nd of each month. So far 860,000 homes and businesses have participated in the initiative on an annual basis, saving a total of KRW 3 billion in power bills.

④ Waste Recycling with Citizens' Participation

Waste recycling is considered to be extremely eco-friendly because it both reduces waste transportation and minimizes landfill or incineration. SMG has expanded recycling stations to boost recycling significantly. From 2012 to 2014, it has recycled 51,000 tons of textile and vinyl waste and reduced 117,000 tons of food waste.

4 Significance of the "One Less Nuclear Power Plant" Initiative

1 Presenting a vision for regional energy policies through a successful model

The One Less Nuclear Power Plant initiative is an evolution of various traditional energy conservation campaigns, broadening its focus to the production of new and renewable energy, efficient use of energy like BRP, and energy saving in a wide range of energy sources like electricity, gas, and petroleum. Also noteworthy is the fact that a local government has presented a successful model of energy policies through various institutional improvements and project implementation of a unique nature despite the limitations faced by a local government in a country with a relatively short history when it comes to local autonomy. In particular, other local governments in the country have benchmarked the city's policies regarding the FIT program, preferential lease conditions for PV power plants, and implementation of small-scale solar power stations.

2 Active Civic Engagement in Energy Issues and Positive Civic Response to the Initiative

The One Less Nuclear Power Plant initiative is the citizens' action plan on energy issues. In 2013, 47% of the city's households (1.68 million) took part in the Eco-Mileage program as members; 30,000 students acted as Energy Guardian Angels at home and school, 159,000 residential and office buildings implemented BRP, and 8.29 million LED lights were installed under SMG's various incentive programs. Civic response to the initiative is positive, too. In a survey conducted in March 2014, 71% responded that they knew about the initiative, with 59% evaluating it positively. Negative assessment remained at the level of 13%. In other words, positive evaluation was about 4.5 times the negative assessment.

3 Contributions to Industrial Development and Job Creation

The One Less Nuclear Power Plant initiative actually helped the LED industry in the region stand on its own feet through the replacement of all the lights in the city's subway stations as well as the compulsory installation of LED lights in all new city government-related buildings and facilities. It also contributed to job creation in the areas of manufacturing and installation of PV power plants and fuel cells by attracting KRW 600 billion in investments in the areas from

the private sector. A number of energy designers have formed three co-ops to continue their BRP ventures for commercial buildings following their work on the city government-initiated BRP projects.

4 Improved Image as a Global Green City

① Recognition from International Organizations like the UN and WWF

The One Less Nuclear Power Plant initiative has earned recognition from international organizations including the United Nations, becoming the city's representative energy initiative. In June 2013, the Eco-Mileage System won the 2013 UN Public Service Award in the category of "Fostering Participation in Public Policy Decision Making through Innovative Mechanisms" for its civic participation, expansion of culture of energy conservation, and reduction in energy consumption. Established in 2003, the award is the most prestigious international recognition of excellence in public service. In November 2013, the initiative won the "Climate Action Leadership Award" in the Government Leadership Awards held in Poland by the World Green Building Council (WGBC) for its comprehensive campaign to reduce energy consumption. Highly recognized were the city's efforts particularly the initiative to reduce energy consumption by buildings, which account for 58% of its total energy consumption, through BRP and to increase the production of new and renewable energy. Such was a successful attempt to turn the tide, and the city's total energy consumption began to decrease. In April 2014, Seoul Metropolitan Government was awarded by the World Wide Fund for Nature (WWF) and Local Governments for Sustainability (ICLEI) as the National Capital of the 2014 Earth Hour City Challenge (EHCC) for its efforts and commitment to combating climate change by reducing its CO2 emissions and solving global energy and environmental issues.

WORLD GREEN BUILDING COUNCIL Government Leadership Awards GLOBAL EXCELLENCE IN LOCAL GREEN BUILDING POLICY	EARTH HOUR CITY CHALLENGE	UN Public Administration Programme Division for Public Administration and Development Management (DPADM) UN Department of Economic and Social Affairs (UNDESA)
"One Less Nuclear Power Plant" WGBC "Climate Action Leadership Award"	**"Earth Hour"** WWF & ICLEI "National Capital of the 2014 Earth Hour City Challenge"	**"Eco-Mileage"** UN Public Administration Programme "Fostering Participation in Public Policy Decision Making through Innovative Mechanisms"

② Increased Attention of Global Media to the Environmental Policies of Seoul

The One Less Nuclear Power Plant initiative accounted for a mere 1% of overseas media coverage of SMG's major policies in 2012 but jumped to 10% the following year. The US's CNN featured extensive reports on SMG's "weekly no-driving day scheme" and "disclosure of air quality information" during its coverage of C40 (C40 Cities Climate Leadership Group). Chinese media have also paid keen attention to the city's efforts to reduce energy consumption and protect the environment. For instance, CCTV, Xinhua News Agency, People's Daily, Science & Technology Daily, and "Economy" covered the support for green products, recycling, and energy self-reliant villages, among others. "The Nihon Keizai" and "Hokkaido Shimbun" of Japan introduced the city's limitation on the maximum cooling temperature in summer in offices and shops and the city officials' efforts to enforce the regulation. The "Tokyo Shimbun" featured articles on the city's One Less Nuclear Power Plant initiative.

③ Attracting Major International Organizations and Conferences

The One Less Nuclear Power Plant initiative is aimed at improving the city's sustainability through reasonable energy consumption while contributing to the worldwide efforts to combat climate change. SMG has continued to enhance its international cooperation to align its various efforts with international endeavors. In October 2012, ICLEI (Local Governments for Sustainability) set up its East Asian headquarters in Seoul. SMG attracted the ICLEI World Congress 2013 to Seoul.

In November 2013, SMG launched the Seoul International Energy Advisory Council (SIEAC) with ten world-renowned experts in energy – such as Amory Lovins, Walt Patterson, and Allan Jones – to cope with the issue of a megacity's excessive energy consumption and get policy advice on the city's One Less Nuclear Power Plant initiative. The council appointed Walt Patterson as chairperson and Mycle Schneider as coordinator.

As its first undertaking, SIEAC hosted the "Seoul International Energy Conference 2013" under the theme of "Energy Transition Toward a Sustainable City: Challenges and Opportunities for Seoul" on 13 November 2013, with more than 600 participants attending including energy experts and representatives of civil society in Korea. The attendees paid keen attention to the global experts' evaluation of the city's energy policies and ways to improve them.

At the conclusion of the conference, the council presented nine recommendations for "Seoul seeking to become an energy self-reliant city," keenly aware of the city's energy conservation efforts. They added that, since they were not given enough time to learn fully about a megacity like Seoul, the recommendations should be regarded as a mere steppingstone for further discussions.

5 Phase 1 Programs to be Enhanced or Developed

1 Necessity of Presenting the Values of Seoul's Energy Vision

Phase 1 was promoted with focus on the realizability of programs that should lead to the reduction of the city's energy consumption by 2 million TOE within 3 years. Now, SMG needs to present its vision for the megacity's overall energy welfare from the long-term perspective.

2 Necessity of Forming a Sustainable Governance Framework and Expanding Proactive Civic Engagement

Phase 1 was led by the Implementation Council for One Less Nuclear Power Plant in both agenda setting and implementation. The city's self-governing districts or numerous civic organizations like Village Communities played a relatively passive role in the formation and implementation of the initiative policies. Civic participation increased in various energy conservation efforts such as Eco-Mileage but was limited in the production of renewables or efficient use of energy, largely because focus was placed on relatively large-scale PV power plants and fuel cell plants.

3 Institutional Limitations in the Production of Renewables

The REC price dropped from KRW 219 in 2011 to KRW 128 in 2013 because the mandatory purchase quantity of solar energy remained low, hurting the PV plant operators financially; this discouraged them from expanding their facilities. Moreover, the installation of PV power plants is not allowed on empty space within development-restricted areas or parks. The electricity connection fee for PV power plants is too high. The country's relatively low electricity price leads to a sharp increase in the shift from other energy sources to electricity, adversely affecting the financial feasibility of BRP and commercial solar power business.

4 Necessity of Enhancing the Organizational Framework

The One Less Nuclear Power Plant initiative lacked a comprehensive governance structure, which caused the initiative to become less efficient in areas under the control of other headquarters of the city government, such as welfare and jobs. Moreover, an organization needs to be set up to promote various projects of strong public nature like energy welfare programs and municipal new and renewable projects.

Ⅱ One Less Nuclear Power Plant, Phase 2

1 Discussions on the Promotion of One Less Nuclear Power Plant, Phase 2

Since the goal for Phase 1 was about to be achieved six months earlier than scheduled, SMG began discussions on Phase 2 with experts and residents for the purpose of fulfilling the municipal administration's values – energy self-reliance, sharing, and civic engagement – through institutional improvements and social structural reforms. It also conducted extensive research on similar overseas initiatives.

1 Setting Directions through the Implementation Council for One Less Nuclear Power Plant

Toward the end of 2013, the reduction of 2 million TOE as the goal for Phase 1 of the One Less Nuclear Power Plant initiative was forecast to be achieved before the end of the first quarter of 2014, six months ahead of schedule. Thus, SMG began discussions on Phase 2 of the initiative in January 2014.

The discussions were led by the Implementation Council for One Less Nuclear Power Plant, a public-private governance organization. The values and vision for Phase 2 were discussed at a general meeting of the council. To set up more effective implementation plans, the existing four subcommittees were restructured into the following five subcommittees: General; Energy Production; Energy Efficiency and Conservation; Energy Industry and Jobs, and; Energy Welfare and Communities.

Through 5 general meetings and 13 subcommittee meetings, the implementation tasks for Phase 2 were identified, including specific ways to accomplish them. A forum on energy policies was then held to collect the opinions of experts and citizens on the council's draft proposals for Phase 2.

General Subcommittee	Production Subcommittee	Energy Efficiency & Conservation Subcommittee	Industry & Jobs Subcommittee	Energy Welfare and Communities Subcommittee
· Overall control of plans · Reforms of systems and regulations	· New and renewable energy · Decentralized energy, etc.	· BRP and transportation · Eco-Mileage, etc.	· Support for industries and job creation · Support for social enterprises	· Support for low-income households · Donation and sharing programs

2 Civic Participation in Policy Setting

To identify tasks suitable for Phase 2 of One Less Nuclear Power Plant, SMG collected citizens' opinions online and offline including conferences. In February 2014, it launched a public contest for the official title of Phase 2 of the initiative. In March, it conducted a survey on citizens' awareness of the initiative and willingness to participate in Phase 2 among 2,000 citizens. Moreover, in March 2014, SMG held "a social fiction conference on Phase 2 of One Less Nuclear Power Plant" under the theme of "ten million citizens' sunlight imagination fair for an energy self-reliant Seoul" at the Multipurpose Hall of City Hall. A total of 400 citizens presented diverse opinions. SMG will continue to encourage citizens' active on/offline participation in setting agenda items for Phase 2.

Social Fiction for Phase 2 of One Less Nuclear Power Plant

3 Collection of Opinions from Experts at Home and Abroad and Various Civic Groups

The draft proposal for Phase 2 of One Less Nuclear Power Plant – prepared by the Implementation Council for One Less Nuclear Power Plant – will be reviewed by experts at home and abroad including the International Energy Advisory Council and various civic groups as well as individual citizens. The input will be deliberated on by the various divisions of the city government in terms of practicality before the final plan for Phase 2 is produced by the city government.

2 Background of the Composition of the Plan for Phase 2

1 Continuous Development of Phase 1 Undertakings that Realized Reduction of 2 Million TOE

Phase 2 of One Less Nuclear Power Plant should proceed such that it will effectively enhance the results of Phase 1 and bring the full value of energy to citizens through the institutionalization of eco-friendly energy systems and social

structural changes. Phase 2 will also have to address the issue of organizational shortfall as identified in Phase 1 in terms of lack of governance and comprehensive control tower. It should reflect the new technologies and advanced policies to be discovered by the city of Seoul in the months ahead. It will eventually pursue sustainable energy policies based on reasonable energy institution and efficient social structures.

2 Connection with the Central Government's Second Basic Energy Plan

In January 2014, the central government announced the country's Second Basic Energy Plan for 2014~2035. The plan has made a paradigm shift for energy policies from "Expansion of Supply" to "Management of Demand." It is aimed at reducing the total estimated energy consumption until 2035 by 13%, with the consumption of electricity cut by 15% largely through reforms in the energy pricing system and distribution of high-efficiency appliances.

The government set the following as the six core tasks for the basic plan: promoting demand-centered energy policies; establishing decentralized power generation systems; enhancing the sustainability of energy policies; stepping up energy security; establishing a stable supply system, and; implementing energy policies that engage the people.

In line with the focus shift of the national energy plan from "Expansion of Supply" to "Management of Demand," Phase 2 of One Less Nuclear Power Plant needs to align its focus with the core tasks of the 2nd national basic energy plan.

<Focus Shift between the First and the Second Basic National Energy Plans>

Shift of energy policy focus from supply expansion to demand management thru increases in electricity prices	⇨	Securing the economic feasibility of the solar power business (renewables production) and BRP and LED (energy efficiency)
Improving public acceptance through decentralized power generation instead of large-scale, centralized power grids	⇨	Laying the foundation for active, decentralized power generation including community energy service and non-utility cogeneration plants
Systematic demand management based on ICT including Internet and smartphones and fostering of related industries	⇨	Creation of urban-type jobs through the priority application of advanced technologies like BEMS and ESS

3 Review of Energy Policies of the World's Leading Cities

Many cities in the developed world are already carrying out diverse sustainable energy policies to counter climate change and energy crisis. In particular, New York City has announced "PLaNYC 2030" aiming at a pleasant city to live in, among others. The plan calls for securing decentralized energy sources and expanding cogeneration for more efficient energy conservation as well as urban planning conducive to the supply of clean energy available at low and stable prices. The EU has declared its 2030 Framework for Climate and Energy Policies, which calls for a 20% reduction in GHG emission, an increase in the proportion of renewables to 20% by 2020, a 40% reduction in GHG emissions, and an increase in the proportion of renewables to 27% compared to 1990. France carried out a government-sponsored, nationwide debate for 8 months between November 2012 and July 2013 regarding a possible shift of the country's energy system from nuclear to renewable energy. SMG keeps monitoring trends in advanced cities' energy policies, and it will continue to propose energy policies most suitable to the city's conditions.

3 Phase 2 of One Less Nuclear Power Plant

1 Diagram of Vision for Phase 2

Core indicators

Achievement of 20% Self-Sufficiency Ratio in Electricity by 2020

- 4 million TOE in renewables production plus energy conservation
- 10 million-ton reduction in GHG emissions

Vision

"Seoul, an Energy Self-Reliant City" where citizens produce energy and consume it efficiently

Values

Energy self-reliance + Energy sharing + Energy participation

Policy Goals

1. A city pursuing decentralized energy production
2. Social structure based on efficient, low energy consumption
3. Creation of good jobs through innovations
4. Promotion of energy-sharing, warm communities

Promotion strategies

- ○ Energy self-reliance led by 10 million citizens who transform from mere energy consumers to producers as well
- ○ Citizens' internalization of values of renewable energy production and efficient energy use
- ○ Creation of high-quality jobs by supporting the development of a sustainable energy industry
- ○ Realization of a virtuous circle of energy participants' profit making and charitable contribution

Institutionalization + Civic governance ⇨ Social structural changes and innovations

【Comparison of Phase 1 and Phase 2】

Description	Phase 1	Phase 2
Vision	■ **Laying the foundation for energy self-sufficiency**	■ **Seoul, an energy self-sufficient city** ‣ **Three energy values: self-sufficiency, sharing, and participation**
Goals	■ **Reduction of 2 million TOE**	■ **Achievement of 20% self-sufficiency ratio in electricity** - 4 million TOE in renewables production and energy conservation and reduction of 10 million tons of GHG emissions
Strategies	■ **Production of new and renewable energy, efficient use of energy, and energy conservation**	■ **Changes in social structures through institutionalization** - A city based on decentralized energy production - Social structure based on efficient, low energy consumption - Creation of good jobs through innovations - Promotion of energy-sharing, warm communities
Tasks	■ **71 projects in 3 categories**	■ **90 projects under 23 tasks in 4 categories**
Production	‣ **Promotion of large-scale BTO (Build-Transfer-Operate) projects**	‣ **Small-scale participatory, decentralized production systems** - Diversification of citizen participatory solar power generation models - Introduction of mandatory electricity production by each building - Expansion of fuel cells and cogeneration for buildings ‣ **Institutional support to secure economic feasibility**
Efficient use and conservation	‣ **Promotion of investments through preferential BRP loans** - Promotion of BRP at the level of each building ‣ **Energy conservation-centered implementation campaigns** - Eco-mileage, Energy Guardian Angels Corps, etc.	‣ **BRP activation through institutional improvements** ‣ **Inducing voluntary investments through systematic arrangements** - Stabilization of the energy consumption certificate system enabling building energy efficiency to be reflected on building prices ‣ **Use of climate & energy map and reflection of BRP on urban planning** - BRP consideration in regional development plans ‣ **Citizens' internalization of energy conservation through social & cultural improvements**

Industrial jobs	▸ **Indirect support through R&D, financial loans, etc.**	▸ **Direct support through green technology startups, product commercialization, marketing, etc.** - Operation of tech shops and hub centers and support for marketing ▸ **Creation of community-based energy service jobs**
Community welfare	▸ **Unsettled concept of energy welfare** - Focus placed on directly subsidizing energy costs in winter	▸ **Establishment of basic rights to energy welfare and realization of sharing** - Enactment of ordinances and establishment of the Citizen Energy Welfare Fund
Promotion system	▸ **Implementation Council playing advisory and monitoring roles**	▸ **Realization of practical energy governance** ▸ **Establishment of implementation systems including Energy Corporation** ▸ **Promotion of cooperative projects with neighboring local governments**

2 Quantitative Goal-Centered (Phase 1) → Energy Value-Centered (Phase 2)

SMG has carried out discussions on the vision and values of Phase 2 of One Less Nuclear Power Plant through meetings of the Implementation Council for One Less Nuclear Power Plant, Social Fiction Grand Citizens' Conference, and various online surveys. Through the process, it has come up with the three values of Phase 2: energy self-reliance, energy sharing, and energy participation.

Energy Self-Reliance

- Shift to a responsible energy consumer city through reduced reliance on external power supply
- Production of safe, sustainable energy in preparation for energy crises
- Development of energy industry and creation of jobs in the process of realizing energy self-reliance

+

Energy Sharing

- Citizens sharing their energy services with the underprivileged and future generations
  - Increased fairness in energy production and consumption and mutual prosperity through energy welfare for the impoverished

+

Energy Partici-pation

- Establishment of open energy governance for energy policy setting and implementation
- Disclosure of energy information and policies and provision of opportunities for education and training

3 Core Indicators for Phase 2: Achievement of 20% Self-sufficiency in Power Supply

SMG has set a goal of increasing its electricity self-sufficiency ratio from 4.2% in 2013 to 20% by 2020 – 46% from the production of new and renewable energy and cogeneration and 54% from improvements in energy efficiency and conservation of energy. As a core indicator, the energy self-reliance rate pursues energy justice through the shift from an energy consumer city to an energy producer city and mirrors the city's local energy policies designed to complement the central government's energy policies depending on mass power production and mass power transmission. The rate also represents the minimum energy requirements of the city to run its basic infrastructure on its own during power outages. It reflects the city's decentralized energy production and energy efficiency as the basic requirements for peak management and realization of a blackout-free city. Also indicative of the city's efforts in the areas of new and renewable energy, decentralized production, efficiency, and conservation, the core indicator can be met only when renewables production has increased and consumption has decreased. Its limit is that it is not that effective in the reflection of a city's efforts to cut down other energy sources such as fossil fuel. Thus, SMG is planning to use other indicators for CO2 reduction and TOE production and reduction, too.

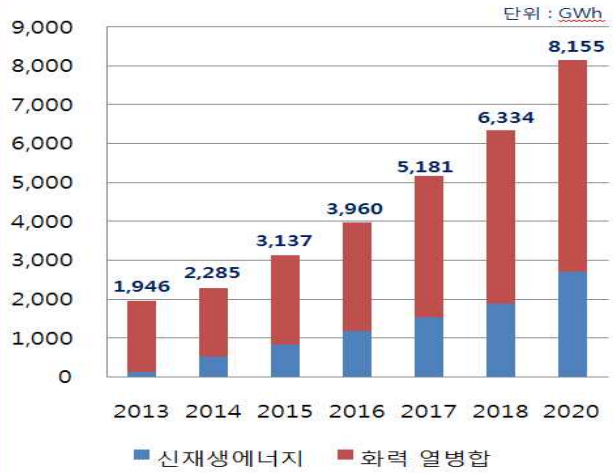
The electricity consumption of Seoul in 2020 is estimated to be 50,330GWh based on the average annual increase of 1.2% between 2009 and 2013. Through Phase 2 of One Less Nuclear Power Plant, however, SMG plans to reduce the 2020 figure by 9,553GWh – 5,639GWh through energy efficiency including BRP and LED replacement and 3,914GWh through energy conservation including Eco-Mileage – to 40,777GWh.

On top of that, SMG plans to produce 8,155GWh of electricity through renewables production and expansion of thermal power plants and cogeneration: 2,711 GWh from new and renewable energy (256GWh from PV power plants and 2,365GWh from fuel cell power plants) and 5,444GWh from thermal power plants and cogeneration (1,195GWh from the integrated energy business, 803GWh from non-utility cogeneration, and 3,446GWh from thermal power plants).

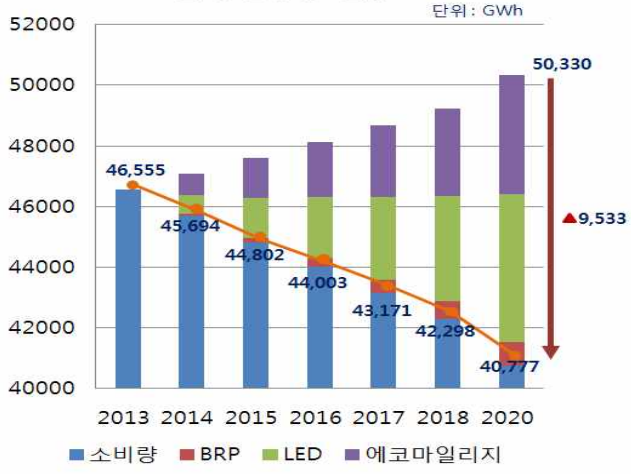
【Yearly Plans to Achieve 20% Self-Sufficiency in Electricity】

2013	2014	2015	2016	2017	2018	2020
4.2% ➡	5.0	7.0	9.0	12.0	15.0	20%
Demand (GWh)	47,076	47,603	48,137	48,676	49,221	50,330
Production (GWh)	2,285	3,137	3,960	5,181	6,344	8,155
Reduction (GWh)	1,382	2,791	4,134	5,505	6,923	9,553

【Prospects of Power Production】



【Prospects of Power Demand & Reduction】



【GHG Reductions through Phase 2 of One Less Nuclear Power Plant】

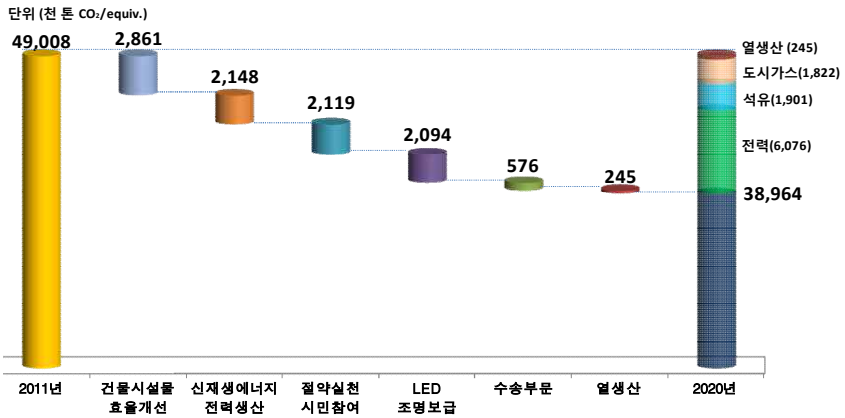
▌Status of CO2 Emissions in Seoul as of 2011

In 2011, Seoul emitted 49 million tons of CO2eq or 9.8% of the nation's total emissions, a low proportion compared to the city's proportion in population and GNP. Such is attributable to the fact that the city's major industries are distribution and service industries, which consume less energy than manufacturing, for instance. Nonetheless, the problem is that the energy consumption of buildings and means of transportation accounts for 90.9% of the city's total GHG emissions, and their indirect emission has more than doubled since 1990 largely because their energy sources have changed from coal and petroleum to electricity and thermal energy.

Emission Status in 2011	Changes compared to 1990
Total: 49 million CO2eq	‣ Up by 8.9% (44.98 million CO2eq in '90)
- Direct emission: 26.10M CO2eq - Indirect emission: 22.95M CO2eq	‣ Direct: 32.4% reduction ‣ Indirect: 260% increase

▌Goal: "10 Million Tons" in GHG Emissions (20.5% decrease compared to 2011)

SMG has announced that it would reduce its GHG emissions (49 million CO2eq in 2011) by 10 million tons by 2020 — a 20.5% reduction compared to the emission in 2011 — through reductions of 2.86 million tons from BRP, 2.15 million tons from renewables, 2.12 million tons from energy conservation, 2.09 million tons from LED replacement, 576,000 tons from transportation, and 245,000 tons from thermal production.



2011
49 million tons of CO2eq
⇓
2020
38.96 million tons of CO2eq

4 Major Policy Indicators of Phase 2

Classification	Indicators	Unit	Total	2014	2015	2016	2017	2018	2020
General	○ Electricity self-sufficiency	%	-	5.0	7.0	9.0	12.0	15.0	20.0
	○ Renewables production	%	-	2.0	2.5	3.0	3.5	4.0	5.0
	○ Total energy production & reduction	10K TOE	-	20	90	160	230	300	400
	○ Total CO2 reductions	10K TOE	-	15	100	300	470	660	1,000
Production	○ PV power plants	MW	105	24	21	20	20	20	40
	○ Hydrogen fuel cell plants	MW	195	41	34	40	40	40	100
	○ Total non-utility building cogeneration	MW	61 (150)	1 (90)	10 (100)	10 (110)	20 (130)	20 (150)	54 (204)
Efficiency & conservation	○ Promotion of office & residential building BRP	Bldgs.	60,000	10,000	12,500	12,500	12,500	12,500	13,000
	○ LED distribution (public & private sectors)	10K	2,830	500	575	575	580	600	1158
	○ Total vehicles for the car-sharing service	Car	3,000	1,500	1,800	2,000	2,500	3,000	3,500
	○ Eco Millage Member	10,000 member	280	200	220	240	260	280	300
Industry & jobs	○ Establishment of co-ops & social enterprises	Unit	70	10	12	14	16	18	20
	○ Support for green energy tech shops	Case	210	-	30	50	60	70	90
	○ Creation of green clusters	Place	6	1	1	1	1	2	-
Community welfare	○ Enactment of energy welfare ordinance	-	-	-	Enact	-	-	-	-
	○ Citizens' participation in the Energy Welfare Fund	10K people	10	-	-	2	3	5	5
	○ Training of energy social workers	Person	180	10	20	50	50	50	50
	○ Creation of energy self-reliant villages	Place	200	15	20	35	60	70	70

5 Tasks and Individual Projects of Phase 2

- Presentation of the city's four energy goals and implementation governance
- 23 tasks and 90 individual projects - concentration on the promotion of 10 core projects

Four Goals in Energy Policies

Expansion of decentralized production	Low energy city	Creation of good energy jobs and workplaces	Welfare realization thru sharing
5 tasks & 20 projects	9 tasks & 35 projects	4tasks & 17projects	5tasks & 18projects
1. "Solar City Seoul" project 2. Opening of era of decentralized energy production by individual buildings 3. Expansion of non-utility energy households to 60,000, saving 20% in heating costs 4. Discovery of unused energy throughout the city 5. Active support for energy self-reliance through institutional reforms	1. Declaration of zero supply of external energy for new buildings 2. A healthy, pleasant city through energy diagnosis and efficient use of energy 3. Enhanced responsibility for the public sector's energy efficiency 4. Seoul, City of LED Lighting 5. Restructuring of the city into low-energy urban space 6. Expansion of green cars 7. A city with energy-saving transportation environment 8. Establishment of a culture of energy-saving civic life 9. Creation of the world's best recycling city	1. Creation of green energy jobs with citizens 2. Tailored life cycle support for green energy companies 3. Promotion of green energy industry and building of green tech infrastructure 4. Cultivation of IT-based, innovative green energy technologies	1. Establishment of Energy Welfare Fund thru citizens' participation 2. Guarantee of rights to basic energy services 3. Promotion of projects aiming at reducing energy costs thru energy shift or efficiency enhancement projects 4. Special measures for the energy-underprivileged 5. Energy community projects

Implementation Governance

1. Establishment of local energy governance and energy code of conduct
2. Establishment of an integrated implementation control organization through "Seoul Energy Corporation (tentative name)
3. Sharing policies with neighboring cities and promotion of joint projects including energy production at the metropolitan level

6 Ten Core Projects - A Pledge to Citizens, with Citizens

① A solar-powered city where citizens produce energy through 40,000 micro PV power plants

○ Sunlight Citizens' Fund worth KRW 50 billion and expansion of Seoul-type feed-in-tariff (FIT)

② Expansion of mandatory use of renewables and decentralized power from 12% to 20%

○ Compulsory use backed up by amendments of laws on environmental impact analysis, environmental reviews, etc.

③ Disclosure of energy consumption by buildings and introduction of tailored energy conservation models

○ Mandatory building energy diagnosis and energy consumption certificate system (in 2016)

④ 100% LED replacement including security lighting and street lamps

○ Security lighting in 2016 ⇨ Public institutions in 2017 ⇨ Street lamps in 2018

⑤ Introduction of the Driving Mileage System (1.41 million cars by 2018)

○ Gradual shift of focus from time-specific to distance-specific no-driving incentives

⑥ Creation of jobs in the service sector including 25 Energy Hub Centers

○ Cultivation of 70 co-ops and social enterprises offering energy consulting and energy services

⑦ Seoul leadership in new energy industries

○ Creation and expanded convergence of smart grids, BEMS, and specialized clusters

⑧ Creation of jobs for the elderly and improvement of the recycling ratio through community-based recycling practices

○ Operation of 7,500 recycling stations to improve the city's recycling ratio from 45% to 66% (identical to the level of Freiburg)

⑨ Promotion of power conversion and efficiency projects for the energy-impoverished

○ Enactment of Energy Welfare Ordinance, BRP for 150 welfare facilities, and LED for 120,000 needy households

⑩ Establishment of Seoul energy governance

○ Clarification of the roles of the Implementation Council for One Less Nuclear Power Plant and Green Citizen Council and establishment of community-based local governance

Ⅲ Promotion Plans by Program

1 A City of Decentralized Energy Production

Goal: Expansion of decentralized power supply through increased new and renewable energy and cogeneration

Citizens' participation	Decentralized power supply	Production of new and renewable energy	Local specific energy
40,000 micro PV power plants	61MW non-utility cogeneration	300MW solar power and fuel cell	1.65 million Gcal cooling heat and incineration heat

Current Status

① SMG has installed a total of 250MW of new and renewable energy including 50MW of solar energy. Nonetheless, the city's energy self-sufficiency ratio remains at the level of 4.2%. Though significant symbolically, new and renewable energy has not contributed considerably to improving the city's energy self-reliance.

② Most of the facilities for new and renewable energy during Phase 1 were large. Big profitable empty lots have reached a saturation point.

③ Electricity prices were so low that the economic feasibility of the new and renewable energy facilities for cogeneration and solar power decreased, hurting the prospects for the continued expansion of the facilities in the city.

Basic Directions: Institutional support for small-scale new and renewable energy facilities and expansion of decentralized power supply

① SMG will enhance its support for the spread of production of new and renewable energy – which was initiated by the public sector – to private buildings and ordinary citizens. To this end, it will introduce various policies such as micro PV power plants, Solar Power Generation Citizens' Fund, and Micro Building Power Stations with the citizens' participation.

② SMG will implement systems that will enable building owners to secure the economic feasibility of their decentralized power generation facilities in line with their obligation to install such facilities. To that end, it will enhance the evaluation criteria for environmental impact assessments while lowering the prices of the natural gas used for fuel cells and cogeneration.

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1 Production of "Healthy and Clean Electricity" through Citizens' Solar Power Generation

① Dissemination of "40,000 micro PV power plants" that save KRW 10,000 in a household power bill

SMG plans to distribute 40,000 "mini PV power plants" that can be installed in verandas for the purpose of transforming citizens from energy consumers to energy producers and raising their awareness of eco-friendly energy. It will implement a pilot project involving 8,000 households in 2014 and increase them to 10,000 households every year thereafter.

② Creation of 10MW "Solar Power Landmarks" in Various Locations

SMG plans to install a total of 10MW PV power plants along the city's main streets as the city's "Solar Power Landmarks" by 2018. It will launch a pilot project at the northern end of Seongsan Grand Bridge in 2014, followed by installations at Gangbyeon Buk-ro, bridges across Han River, downtown areas, and Hangang parks. It will seek ways to use them as tourist attractions as is the case in Freiburg, Germany.

③ Operation of the "Solar Power Generation Citizens' Fund" Worth KRW 50 Billion for Energy Production and Profit Making by Citizens

SMG will create the "Solar Power Generation Citizens' Fund" for citizens to make direct investments in the PV power plant business and earn profits. It plans to launch ten funds with total amount of KRW 50 billion, which will be invested in the creation of 10 PV power plants in the Gueui Water Purification Plant (1MW). A citizen can invest between KRW 100,000 and KRW 10 million, for which annual average revenue of 4% is guaranteed. Profits or investments can be donated to charity programs targeting the energy-disadvantaged.

④ Expansion of Rooftop PV Power Plants to All Buildings in Seoul

SMG will expand its PV power plants installed in public land while increasing rooftop PV power plants in schools and office buildings throughout the city. Most notably, the number of PV power plants in schools will increase from 30 in 2014 to 230 by 2018.

SMG will continue to support the installation of rooftop PV power plants in private buildings. It will expand the limit of the city's feed-in tariff scheme (KRW 50 for 1kWh for a small-scale PV power provider of less than 50kW) from 10MW to 20MW. It will also continue to provide them with preferential loan conditions. In addition, it will increase the number of large companies with whom MoUs will be executed regarding the installation of PV power plants.

⑤ Institutional Improvements for the Continuous Expansion of PV Power Plants

SMG will promote continuous institutional improvements to expand the installation of PV power plants. It plans to propose that the central government reinstate the national FIT scheme supporting the installation of a PV power plant with capacity of 100kW and amend the relevant laws so that SMG can install PV power plants in urban parks with potential for large-scale PV power plants. Currently, high installation fee is incurred when PV power plants are located far from external KEPCO power lines. SMG plans to request that small-scale PV power plants be allowed to be connected to internal power lines or connection fees be reduced.

2 Safe City through Decentralized Electricity Production including "Mini-Building Power Plants"

① Direct Electricity and Heat Production by Residential and Commercial Buildings: 90MW in 2014 → 150MW in 2018

As of 2013, non-utility cogeneration plants were installed in 46 apartments and commercial buildings with total capacity of 89MW – 55% of apartments and 4% of commercial buildings. SMG plans to expand the cogeneration capacity from 90MW in 2014 to 150MW in 2018. To this end, it requires the installation of decentralized power generation facilities for new buildings. It plans to request the central government to make improvements in the pricing of heating & cooling fuel and electricity including time-based electricity pricing. It will also ask the central government to support the city's PV power plants through the nation's Energy Use Rationalization Funds.

② Replacement of Old Residential Boilers with Micro Cogeneration Boilers that also Produce Electricity

To increase the electricity self-sufficiency of houses, SMG replaced old residential boilers with micro cogeneration boilers that produce electricity, too. To this end, it will launch a pilot project in 2014 and review the results. Depending on the results, it will begin to provide subsidies or loans in 2015 for the purpose of distributing 10,000 stirling engine boilers to multi-family homes including apartments by 2020.

③ Installation of 174MW Fuel Cells that are Instrumental in Electricity Self-Reliance and with Significant Private Investment Effects by 2018

SMG installs a total of 174MW fuel cell plants, which contribute significantly to electricity self-reliance and private investment effects by 2018. It will install a 20MW fuel cell at each of the city's infrastructure facilities including railway vehicle bases (Sinnae, Suseo, and Jichuk) and Seonam Sewage Treatment Center to ensure that the facilities keep operating during power outages. SMG distributes 1kW class micro fuel cells to houses and buildings particularly hotels and hospitals that use electricity and heat energy around the world.

④ Construction of Supply Facilities of Integrated Energy for a Stable Heat Source of Magok District

SMG is building an integrated energy supply facility to deliver heat to Magok District steadily. It will deal with the demand for heat in the district until 2016 in collaboration with the Mokdong Cogeneration Plant and Bucheon Combined Heat and Power Plan run by GS Power and construct a 280MW gas-based combined heat and power plant in 2017 for stable heat supply starting 2020.

⑤ Institutional Improvements for the Expansion of Decentralized Power

SMG will also promote institutional improvements to expand the supply of power from decentralized sources. It will increase the mandatory use of renewables for new buildings of over 100,000 square meters from 10% to 20% beginning 2020. To ensure that the increase of the ratio is reflected at the design stage, the criteria for environmental impact assessment will be adjusted accordingly.

SMG will start regulating the prices of the natural gas used for fuel cells and cogeneration in an attempt to secure the economic feasibility of the nascent business in the city. Institutional improvements will be made to ensure that any surplus power can be sold to KEPCO. It will also have the National Fire Safety Standards of the National Emergency Management Agency modified so that non-utility cogeneration plants will be recognized as emergency power generators for the purpose of extinguishing fire.

3 Discovery and Utilization of Discarded or Unused Energy in Neighboring Cities

① Discovering All Usable Energy Sources

SMG recovers discarded energy and uses it as energy source for district heating. In 2012, it developed high-efficiency hydro power generation technology that could generate power at an altitude of less than 2 meters and applied it to a 360kW hydro plant built in the Noryangjin Distributing Reservoir. Based on the success of the pilot project, SMG will continue to discover energy sources for small-scale hydro plants including Jamsil Weir, sewage treatment centers, and water purification centers for the purpose of installing a total of 3,160kW small-scale hydro plants. SMG also seeks to recover heat from the exhaust gas of incinerator chimneys in order to use it as heat source for neighboring areas. It will start with 9 locations at the Mapo Resource Recovery Facility and expand to a total of 32 chimneys by 2018, enabling the supply of heat to 70,000 households in neighboring apartment complexes. At present, 243 subway stations draw a total

of 120,000 tons of ground water and use only 20,000 tons for cleaning purposes, discharging the rest into streams. SMG plans to use the discarded ground water to cool and heat neighboring buildings. It will launch a pilot project at the Korea University station in 2014 and expand to 10 stations by 2018 to service the Mokdong Ice Rink and the headquarters of Seoul Metropolitan Rapid Transit Corporation, among others.

② Use of Heat Sources of Neighboring Local Governments and Private Companies

SMG plans to use the heat sources discarded by neighboring local governments and private companies to service 100,000 households. To this end, it will receive 460,000 Gcal and 200,000 Gcal from the Bucheon Cogeneration Plant and Yangju Byeolnae Cogeneration Plant, respectively, from 2014. In 2015, it will begin to receive 50,000 Gcal of the heat used by the data center of KT, a private IT company, to cool its servers to service residents in neighboring apartment buildings. By 2018, it plans to supply a total of 350,000 Gcal annually through linkage with the Seoul Metropolitan District Heating Network.

③ Using Waste as Energy Resources

SMG improves the recycling ratio of waste, including waste vinyl and fabric scraps, through citizens' engagement. It will recycle 243,000 tons of waste vinyl by 2018 through the distribution of exclusive plastic bags throughout the city. It will also collect 168,000 tons of fabric scraps by 2018 through the mandatory separation of fabric scraps from general waste. SMG uses the branches of street trees to make wood pallets. It will build a pallet factory with daily production capacity of 500kg to produce wood pallet fuel used by low-income households, social welfare facilities, and community centers.

2 Energy-Efficient, Low-Energy Social Structure

Goal: A low-energy city using energy efficiently

BRP	LED Distribution	Eco-friendly Transportation	Urban Planning
Systematic energy diagnosis (‘15) Disclosure of energy efficiency (‘15)	Public 100% (‘18) Private 25% → 65% (’18)	Increase of congestion charge EV 14,000 cars	Publication of energy maps Enhanced environmental reviews

Current Status

○ Buildings account for 56% of the city’s total energy consumption and 87% of the city’s electricity consumption. Vehicles account for 20% of GHG emissions. Strong measures are needed in the areas.

○ Energy consumption in Korea is distorted due to relatively low prices of electricity, which discourages investments in the efficient use of energy resulting in the city’s lackluster performance in the development of energy management markets including the efficient use of energy.

○ Players in energy consumption are so widely dispersed there are limits to the effects of the efforts of individuals or the public sector depending on support for loans to manage demand for energy.

Basic Directions: Changeover to an energy-efficient city structure through institutional improvements

○ SMG will promote the basic requirement of efficient use of energy given the fact that the local market is still nascent while continuing to expand its support for BRP loans, for instance. To this end, it will enhance regulations on environmental impact assessment, green building design criteria, and public building design standards.

○ Together with such institutional enhancement, SMG will work to lay the foundation for building energy efficiency to be reflected on building prices so that the market principle plays a critical role in its BRP initiative. To this end, SMG will promote

the compulsory diagnosis of energy efficiency, enhance its energy consumption certificates, and disclose energy scores for all buildings in the city.

○ From the long-term perspective, SMG reflects its principle of the most efficient use of energy by buildings on its urban planning with the aim of transforming itself into a "sustainable low-energy, compact city."

1 Improvements in building energy efficiency through institutional arrangements and application of market principles

① Enhancement of design and maintenance requirements for energy-saving buildings

SMG continues to enhance the criteria for its environmental impact assessment for the purpose of significantly upgrading the energy efficiency of its large-scale development projects and large buildings. Specifically, it will require all types of buildings – including redevelopment and reconstruction – with floor area of 100,000 square meters on land area of 90,000 square meters to have BEMS (Building Energy Management System), install only LED lights by 2018, and secure the highest energy efficiency (Class 1) in design. For private buildings, SMG will strengthen its green building design criteria to improve their energy efficiency. It will raise the bar for building energy self-reliance from 50% in 2014 to 60% in 2016 and 100% in 2023. To that end, SMG will reinforce its requirements regarding the installation of new and renewable energy production facilities and high-efficiency LED lighting fixtures. Beginning 2015, it will apply new construction guidelines for the insulation feature of construction materials, for instance. It plans to construct the “Nowon District Eco-Friendly Zero-Energy Pilot Housing Complex” consisting of 121 households in cooperation with the Nowon District. For public buildings, SMG will enhance the “Criteria for Construction Technology Reviews for Public Buildings in Seoul” to improve their energy efficiency. It plans to raise the mandatory energy supply from new and renewable energy sources from 10% in 2014 to 25% by 2020 and complete LED lamp replacement by the end of 2018. Following a pilot project of BEMS

in 2015, SMG will require all public buildings with floor area of more than 30,000 square meters to be equipped with BEMS starting 2016. For existing buildings, SMG promotes improvements in energy efficiency through energy-efficient remodeling. It plans to designate as a remodeling activation zone an area wherein more than 60% of buildings are over 15 years old and provide incentives for the area where energy-saving work is carried out or new and renewable energy facilities are installed.

② Optimized BRP through Precise Diagnosis of Energy Usage

SMG will improve regulations so that big buildings consuming more than 2,000 TOE will have to go through rigorous energy diagnosis procedures. Specifically, it will persuade the central government to delegate the authority of the Minister of Trade, Industry, and Energy to issue orders for building energy diagnosis to the heads of local governments including the mayor of Seoul. The amended law will also allow the heads of local governments to issue improvement orders when buildings fail to make more than 5% improvement in their energy efficiency. Meanwhile, SMG will develop and disseminate different energy conservation models for groups of buildings such as hospitals, schools, businesses, and hotels by the end of 2014. SMG offers tailored energy diagnosis for houses and buildings. Current energy usage will be carefully reviewed, and energy saving measures will be recommended free of charge by different groups of experts: houses, by energy consultants; shops in small ~ medium-sized buildings, by energy designers, and; welfare facilities and educational institutions, by professional energy diagnosis companies. SMG will carry out BRP for the city's basic urban infrastructure, too. It will focus on improving the efficiency of electrical facilities in sewage treatment facilities through the replacement of old motors with high-efficiency ones and convert into heat source the digestion gas generated in the sewage treatment process. It will also introduce intelligent electricity load management systems in water purification centers. In addition, SMG will begin operating subway cars that enable the recovery of the electricity generated during brake applications.

③ Enhancement of Public Support Policies for BRP

SMG will further enhance the groundwork for its support of BRP in buildings and houses including BRP loans. It will expand the size and eligibility of loans and require building owners to go through energy diagnosis before they can apply for BRP services for purposes of securing better BRP results. The BRP coverage will expand from windows and insulation to energy diagnosis costs, eco-friendly boilers, installation or replacement of HVAC systems, operating systems, and monitoring expenses. SMG will reduce by up to 15% the property tax for new buildings with green building certificates or building efficiency grades. It will extend the same benefits to old buildings that have successfully completed BRP.

④ Information Disclosure → Promotion of Energy Efficiency through Market Economy Principles

SMG plans to have energy efficiency reflected on buildings' prices through the implementation of the energy efficiency classification system for buildings. The system will have the actual energy consumption of buildings recorded in building purchase or lease contracts so that the consumer will make wiser choices, and buildings of higher energy efficiency will consequently command higher prices/rents in the market. Following a trial project in 2015, SMG will launch the system that same year and begin to disclose the building energy information in the country's real estate portal run by the private sector and SMG's Integrated Multi-unit Dwellings Information Plaza starting 2016. For buildings categorized as major energy consumers, SMG will start disclosing their energy score cards to the public to motivate them to conserve energy more aggressively. The cards will contain information on the buildings' energy consumption per unit area, changes in energy consumption, and rankings in energy conservation efforts. Beginning 2015, SMG will implement the "Excellent Energy Efficiency Building Certification System" wherein it will issue a plaque

of recognition to buildings that have reduced energy consumption by more than 5% in an effort to spread energy conservation know-how and induce voluntary participation in energy efficiency improvements.

2 City of LED Lighting: Seoul Introducing 100% LED for Public Institutions

Order of Lamp Replacement	**triple wave lamps ➡ fluorescent lights ➡ security lights ➡ street lamps ➡ system lighting (IT+ lighting)** * Gradual, strategic approaches depending on the levels of LED technologies and their commercialization

① 100% LED Replacement (2.2 Million Lamps) for the Public Sector by 2018

SMG plans to replace all the lights (2.2 million) in the city's public sector including public buildings, subway stations, and security lamps with LED lamps by 2018. In 2014, it will complete the replacement in subway stations plus 350,000 lamps in district offices and municipal hospitals, for a total of 1 million lamps. From 2015 to 2016, it will replace 500,000 lamps including those in the city's welfare facilities and affiliated offices (100%) and security lights and street lamps (50%). Between 2017 and 2018, it will replace a total of 700,000 lamps including those in its various corporations and the other 50% of its security lights and street lamps. Meanwhile, SMG will enhance the "Design Criteria for Public Facilities" to ensure the installation of LED lights in new public buildings. For old public buildings, it will set up an exclusive organization called SPC consisting of representatives of the central government (Korea Finance Corporation, etc.), SMG (road management departments), and private R&D institutions in 2015 in an attempt to minimize the financial burdens associated with LED replacement and promote the faster implementation of the replacement work.

② LED Replacement in the Private Sector: 25% → 65%
(30 Million Lights by 2018)

SMG plans to replace a total of 30 million lights – or 65% of those in the private sector – with LED lamps by 2018. To this end, it will enhance the LED design criteria in the "Green Building Design Guidelines" for new structures measuring more than 500 square meters. By the end of 2014, all the buildings in the city will have to replace more than 25% of their lights with LED lamps and 100% of their lights in underground garages with LED lighting fixtures. By 2020, all the lights in buildings will have to be LED lamps. SMG will support LED light installation in numerous apartment garages throughout the city by having the "Ordinance for Multi-unit Dwelling Support" of the city's 25 self-governing districts revised. Through the modification of the "Seoul Special City Ordinance on Outdoor Advertisements," SMG will make it compulsory for businesses to change signboard lights into energy-efficient LED lamps. Even before the ordinance is modified, it will have 2,000 signboards changed to LED-based ones each year through agreement with shopkeepers. In addition, through the meetings of the Light Pollution Prevention Council, it will encourage the installation of high-efficiency lighting fixtures while discouraging the excessive use of lights.

SMG will expand the voluntary LED distribution in the private sector through collaboration with the private sector and PR campaigns. It plans to launch the "On-Site LED Direct Marketplace" in apartment complexes 200 times. In cooperation with the city's Buddhist leaders, it will distribute 1 million LED lotus lanterns to 500 Buddhist temples. SMG will also open an online information plaza to provide citizens with information on LED prices and technologies. In addition, it will set up 20 PR booths at the Gwanghwamun and Idae Stations to provide diverse information on LED to citizens. It plans to establish "LED Hub Centers" as the city's regional network for LED distribution.

SMG plans to install one or two LED hub centers in each of the city's six areas in cooperation with civil society. The centers will provide one-stop service for counseling, PR, price information, and joint purchase. It will also join forces with the Korea Franchise Association and large-scale discount stores to distribute LED lamps. On behalf of its 100 member companies, the association will sign a contract to install LED lights in their new stores. Discount stores will observe the "LED Purchase Day" regularly and display LED publicity materials in their stores.

SMG will also join hands with corporations to develop LED technologies and expand the LED market through marketing support. To this end, it will run an LED test site in collaboration with the Korea Photonics Technology Institute and SMEs to promote the quality reliability of SME products. Most notably, SMG will perform the evaluation of effects of emotional lighting and hospital lighting with the Korea Institute of Lighting Technology and Korea Photonics Technology Institute in an effort to help improve the performance of LED smart lighting.

To spur the development of LED technologies, SMG will issue the "LED Distribution Standards for Public Institutions in Seoul," which will allow LED lights to be evaluated in terms of optical functions and require LED efficiency to be 10% higher than the national specification. In addition, it will launch the Seoul LED Lighting Fair every year to expand the LED market and open the Comprehensive LED Information Center in Konkuk University for the display and selling of LED lighting fixtures as well as information service and technical exchanges.

3 City of Human-Centered, Energy-Saving Transportation Environments

① Energy Conservation through Reductions in Transportation Demand

Each automobile used for the car-sharing service being promoted by the city of Seoul is estimated to render 3.4 private cars idle every year. In this context, one can see that 3,000 car-sharing automobiles can reduce the more than 10,000

private cars on the street. SMG plans to refocus its car-sharing service on users such as apartment residents, public servants, and corporate personnel and increase the number of vehicles from 1,500 in 2014 (1.65 million members) to 3,000 in 2018 (2.5 million members).

Twice a year, SMG will hold Seoul's "No-driving Day" along the 2.1km stretch between Gwanghwamun and Sungnyemun. During Seoul's "Week of Citywide Use of Green Transportation" every September, it will expand the exhibition of eco-friendly vehicles and festival programs for more citizens to join the event. In 2015, it will resume "traffic inducement charges" in 20 years to reduce traffic congestion and energy consumption. SMG will also raise the charge from KRW 700~800 to KRW 700~2,000 per square meter and require parking facilities to turn more than 30% of their facilities into paid parking to reduce traffic.

In July 2015, SMG will launch the mileage-based "Driving Mileage" instead of the current weekly no-driving day scheme, compliance to which is actually hard to check. Under the new system, benefits will be based on mileage, which is quite easy to verify. In collaboration with insurance providers, among others, SMG plans to increase subscription to 1.41 million vehicles by 2018 based on citizens' voluntary participation.

② Dissemination of Green Cars

Electric vehicles (EVs) emit 25% less GHG even when charging is included. SMG will continue to expand EVs to reduce energy and ultra-fine particles. It will begin using EVs in the public sector, taxis, and car-sharing service before spreading EVs to other private sector businesses. It plans to increase the 195 EVs and 18 high-speed battery chargers in 2014 to 10,000 EVs and 200 chargers by 2018. It will also launch a test bed project for electric taxis in 2014 in cooperation with auto makers, taxi companies, and test institutes.

On top of that, SMG will disseminate 20,000 hybrid cars and buses by 2018. It will continue offering benefits for hybrid cars including reductions in acquisition tax and registration tax, congestion charges, and parking fees. Standards will be

adjusted so that EV chargers can be used for plug-in hybrid vehicles, too. SMG plans to increase the number of hybrid buses – which save 34.5% in fuel costs – from 20 in 2014 to 670 by 2018. Upon the replacement of city buses, the purchase of hybrid buses will be prioritized, and the purchase record will be reflected on SMG's evaluation of performance of the city's bus operators. The purchase of hybrid buses will also be offered CNG subsidy by priority.

4 Settlement of Civic Culture that Practices Resource and Energy Conservation

① Enhanced Eco-Mileage, a Platform for Citizens' Energy Conservation, Contributing to Energy Saving

SMG will continue to expand Eco-Mileage, the citizens' favorite energy conservation platform. It plans to increase membership from 1.6 million in 2014 to 2.8 million in 2018, reducing 850,000 TOE in electricity and natural gas, among others. To this end, it will link the Eco-Mileage program to its other energy-related projects such as production of new and renewable energy, BRP, LED, and energy consulting service while trying to maximize its energy conservation effects through demand-side management including effect analysis and feedback.

② Waste Turning into Energy, Leading to Job Creation and Industrial Development

SMG will also implement diverse projects to turn waste into energy, which in turn will lead to job creation and industrial development. For residential areas, it will increase the number of recycling stations from 1,128 in 73 dongs (smallest administrative unit in Korea) to 7,500 in 300 dongs by the end of 2014. For the effective management of the stations and job creation, it will hire a total of 10,000 people as recycling station custodians or 15 ~ 30 persons per dong.

SMG will train 735 citizens as recycling consultants who will offer “Special On-Site Waste Recycling Consulting Service” to the persons in charge of recycling stations generating excessive amounts of waste as well as the relevant public servants to reduce the generation of waste from the district concerned.
SMG will expand urban mining, which extracts metals from waste electronics. It collects large e-waste free of charge when requests are made to its online call center. It plans to increase the subsidy for EPR (Extended Producer Responsibility) items from KRW 50 per kilogram to KRW 100 by 2018 to increase the recycling rates of electronics. It will continue to run the Gwanghwamun Hope-Sharing Marketplace and Ttukseom Sharing Marketplace while launching a small-scale sharing marketplace in more than 300 locations closer to the residential areas including apartment parking lots and community parks each year.

5 Energy Consideration in Policymaking including Climate & Energy Map and Urban Planning

① Publication of Climate & Energy Map Used in Urban Planning and Land Utilization Plans

SMG will publish the city’s climate & energy map for use as basic data for the city’s major urban development plans, land utilization plans, and action plans on the climate and the environment. The map will feature the characteristics of districts and buildings in terms of climate and energy. SMG will complete the thematic map in 2015, use it in its policymaking processes, and begin to disclose it to the public in 2017.

② District Energy Plans to be Reflected on Urban Planning

SMG will begin to reflect district-based energy plans on its urban development plan 2015 through the overhaul of the “Seoul Special City Guidelines for Environmental Reviews in Urban Planning.” Major changes will cover support

for decentralized energy like solar energy, fuel cells, and cogeneration, including key measures for the city to raise its energy self-sufficiency rate while upgrading its building energy efficiency classification and enhancing its capacity to deal with climate change.

③ Creation of Compact City Consuming Little Transportation Energy

SMG will work out the “Seoul Master Plan 2030” aimed at creating several separate spheres in the city to minimize citizens’ wastage of energy for commuting and moving around. The plan will include the creation of pedestrian-friendly environments securing the minimum commuting distance for citizens, spatial structure focused on the city’s train and subway network to minimize citizens’ driving needs, and prevention of energy-inefficient urban sprawling. Following a pilot project launched in May 2013 for 4 districts in Northeastern Seoul, SMG will work out plans for the city’s 4 large spheres and 25 small spheres by 2015. It will present to the public detailed development plans for the downtown area and a total of 115 micro spheres starting 2016.

6 GHG Emissions Reduction through Phase 2 of One Less Nuclear Power Plant

① GHG Inventory and Verification

SMG will continue to make a detailed inventory of the city’s GHG emissions and use it as basic data for its plan to reduce GHG emissions and shape its policy directions. It plans to select a professional GHG inventory agency that will monitor and verify the city’s GHG emissions inventory in the most transparent manner.

② Early Achievement of the National GHG Emissions Reduction Target

The central government aimed at reducing the country's public sector GHG emissions (annual average emission between 2007 and 2009) by 20% by 2015. SMG sought to meet the target by 2014. It reduced the emissions of its 71 buildings including the new City Hall by an average of 5% annually and met the target in 2014 as scheduled. The central government then set the goal of reducing GHG emissions from the country's waste treatment facilities by 10% by 2015. SMG reduced GHG emissions from a total of 25 sewage treatment centers and water purification centers by more than 3.3% a year through improvements in the energy efficiency of the facilities; thus achieving the 10% reduction goal ahead of schedule.

③ Waste Target Management System → Emissions Trading System (from 2015)

Korea's emissions trading system also allocates – on an annual basis – a certain amount of GHG emissions to organizations emitting a large quantity of GHG and permits them to trade surplus quantities. The eligibility requirement is annual average of 125,000 tons of CO2eq for an organization or 25,000 tons of CO2eq for a worksite during the last three years. At least 25 facilities of SMG including water supply offices and sewage treatment centers meet the criteria.
In June 2014, the Ministry of Environment posted a notice regarding the criteria for the allocation of emission rights. In August 2014, SMG submitted its application for ministerial allocation in consultation with a professional agency. Once the ministry finalizes the allocation for the period 2015~2017, SMG will work out and implement its emission reduction plans in the areas of BRP, LED, and efficient operation of various facilities.

3 Innovation-based, Better Energy Workplaces

Goal: Seoul, Green Special City! Cultivation of Green Industries

Green Industry Clusters	Citizen Energy Business	Local Energy Service	Green Industry Support
6 green clusters	70 social enterprises & co-ops	25 energy hub centers	Support for 234 startups

Current Status

○ The foundation for green industries in Seoul is extremely weak. Up to 99% of companies in more than 10,000 industries are SMEs, and 59.1% of them have fewer than 5 employees.

○ In Phase 1, investments in solar energy and renewables increased, yet most products including modules were fabricated outside of Seoul; hence the little contribution made in the area of job creation.

○ Growth can be expected in the area of energy service including installation and maintenance. So far, however, the installed facilities are not big enough to trigger the further development of the related service industry.

Basic Directions: Enhancement of Foundation for the Development of Seoul-Type Energy Industries and Promotion of Job Creation

○ SMG will expand the installation of new facilities and foster the development of maintenance service industries through continuous investments in new and renewable energy and LED industry.

○ SMG will support pioneering the application of new technologies suitable to mega cities like Seoul, including BEMS and smart grid. Since many new SMEs concerned lack business management competency, SMG will strengthen its corporate life cycle-based, customized support measures.

○ SMG will promote the introduction of industrial clusters including the new and renewable energy industry in Southwestern Soul, urban resources industry in Northeastern Seoul, and green construction industry in Southeastern Seoul.

○ Service sector jobs are largely community-based. SMG will promote residents' participation through co-ops and ensure that job creation is linked to the promotion of energy welfare at the community level.

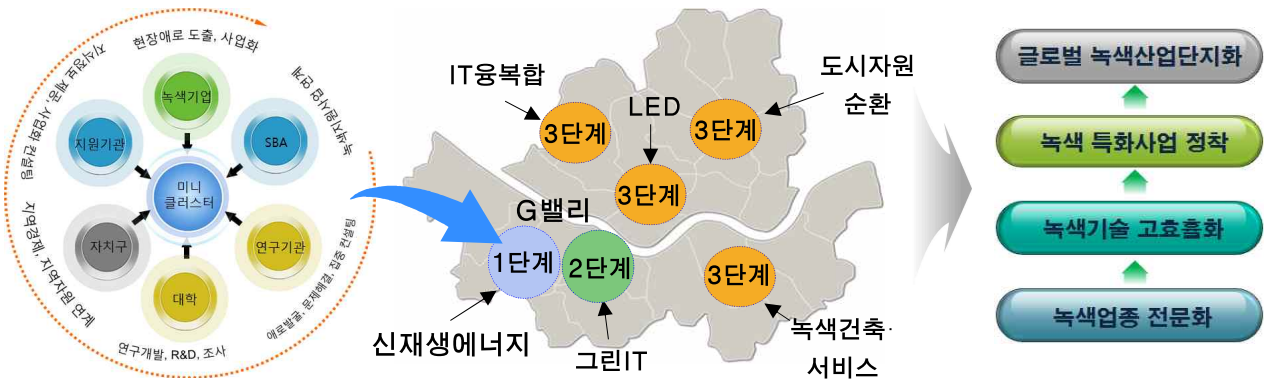
1 Green Special City, Cultivation of Seoul-Type Green Energy Industries

① Cultivation of Regional Bases for Green Energy Industries (6 Green Clusters)

G-Valley located in Guro-gu, Seoul registers the city's largest concentration of new energy businesses including 60 new and renewable energy companies, 117 green IT businesses, and 44 LED corporations. A number of support agencies including Korea LED Association are located there. In particular, because of the potential for collaboration with ICT businesses there, SMG plans to cultivate G-Valley as the pilot new and renewable energy cluster.

Following the trial at G-Valley, SMG will designate a total of six clusters throughout the city for business such as IT convergence, urban resources circulation, and green construction and lend special support to businesses in the clusters.

SMG will form an industry-academe consortium and designate a research institute as well as exclusive management coordinators for the consulting service to businesses. Through the operation of the Green Biz Emergency Telephone Number 119, it will solve companies' grievances quickly. It will also run a green voucher system leading to various services including patents, certification, and exhibition participation.



【Promotion Directions for Seoul-Type Green Industry Clusters】

STEP 1 (14~15) Pilot Operation	STEP 2 (15~17) Expansion	STEP 3 (17~18) Outcomes
Creation of pilot cluster	Expansion of clusters	Cluster convergence
‣ G-Valley New & Renewable Energy Pilot Cluster	‣ Public contest-based selection of areas with a concentration of green businesses ‣ Consortium of district offices, colleges, research institutions, and local civic organizations	‣ Joint R&D and production of convergence products such as solar panel and LED ‣ Cultivation of self-reliant global clusters

② Cultivation of 21st Century-Type Specialized Urban Energy Technologies

SMG will launch a pilot smart grid project by integrating information technologies into its existing power grid to improve energy efficiency and develop demand management markets. It will begin customized projects for several areas considering the characteristics of Seoul and relevant zones; the Sadang area will focus on CES (Community Energy Service), the Guro Digital Complex will concentrate on the energy efficiency of urban industrial complexes, Seoul Metro will work on the energy efficiency of the urban railway, and large apartment complexes will focus on smart grid.

In addition, SMG will replace electric meters with electronic meters that enable electric power demand management – 50% by 2016 and 100% by 2020. It will implement a pilot project for an alarm system that signals the start of the application of a progressive electricity rate in real time at an apartment complex in the Seodaemun District.

SMG will also continue expanding the distribution of BEMS, which is estimated to save an average of 10% of the energy consumed by buildings. Since the technology is still in the infancy stage, SMG plans to apply it in stages in line with the trends of technological development.

In 2014, SMG plans to analyze the performance of the existing five BEMS. By

2015, it will install BEMS in its buildings and industrial facilities as a pilot project. In 2016, SMG will actively promote BEMS installation in new or renovated public buildings measuring more than 3,000m^2 or commercial buildings consuming particularly large quantities of energy. Such upgrade will be promoted by energy service companies (ESCs), with priority given to the allocation of BRP funds. SMG will reflect BEMS on the environmental impact assessment in stages to ensure that BEMS can be introduced at the earliest stage.

SMG will lay the ecological foundation for the development of appropriate technology (Seoul-type energy life technology) in the areas of product development, product commercialization, startup, and marketing. It aims at developing 14 products by 2018 while designating interim support agencies and promoting collaboration with university research institutes and energy self-sufficient villages (social enterprises, co-ops, energy supermarkets, etc.).

2 Tailored One-Stop Life Cycle Support for Green Enterprises

SMG will operate "Green Enterprise Startup Funds," which are designed to support the startup of green companies. It plans to create a total of 8 funds in the aggregate amount of KRW 126 billion – 3 funds with KRW 46 billion in the first stage and 6 funds with KRW 80 billion in the second stage – to provide, for the first 4 ~ 5 years, funds to enterprises with green technologies but lack financial resources. To promising venture businesses, it will provide KRW 25 ~ 30 billion worth of SME Cultivation Fund by priority each year.

SMG conducts a survey on green jobs and publishes a white paper biennially to present the policy directions for the creation of green jobs and use them as basic data for support measures. Meanwhile, it plans to train a total of 2,400 green technology persons for the energy industry including 240 experts and 1,600 technicians by 2018.

In 2014, SMG will promote vocational education for energy managers and solar facilities technicians and open empirical courses for the Green Certificate. In 2015, it will cultivate personnel specializing in cross-industry convergence like the combination of green industry and ICT. By 2018, it will open green MBA

courses in collaboration with universities. SMG will also support courses for green technicians at vocational schools.

SMG will lend full support to the efforts to develop green technologies for the purpose of creating a total of 340,000 green jobs. It is offering R&D funds until 2018 for the development of the Seven Seoul-type Green Technologies including green cars, green IT, new and renewable energy, green construction, and LED lighting. It will select new GT research topics needed by businesses and support related R&D by corporate or university research institutes.

SMG will set up the "Seoul Green Techshop for Green Energy" equipped with DIY space and equipment and devices in 2015. The Techshop will produce more than 50 products a year in an attempt to aid in technical development by companies starting 2016.

SMG will also launch various projects designed to promote the on/offline marketing of green products at home and abroad. Offline, it will facilitate sales of eco-products through the Green Products Fair and Danuri Shops. Online, it will join forces with online shopping malls such as G-Market to open special selling corners for excellent green products, reduce online retailers' sales commissions, and install online main banners for the products. SMG plans to launch the Green Products Expo and publish a guidebook for the top 100 green companies to introduce their products and shopping options.

3 Creation of Green Job with Citizens' Participation

① Creation Ecology for Co-ops and Social Enterprises in the Area of New Growth Energy

SMG plans to discover 70 social enterprises and co-ops in the area of new growth energy and provide them with strong initial support so that they could develop into financially stable, excellent SMEs.

SMG will offer them financial assistance of up to KRW 30 million per project and KRW 100 million per organization. It will also operate education and consulting programs for the purpose of training socioeconomic leaders in the

field of green energy through the “Seoul Socioeconomic Support Center” and “Co-op Consulting Center.” In addition, SMG will organize 10 solar power co-ops and expand public land for the installation of their PV power plants from 20 locations in 2014 to 100 places in 2018.

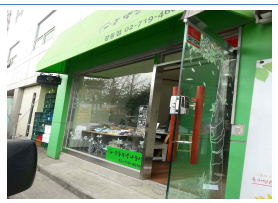
SMG will expand the education for energy designers in charge of energy diagnosis of small and medium-sized buildings from 95 in 2014 to 745 by 2018. It will also help them be financially independent so that they can continue their career in the field by assisting them in their efforts to acquire the relevant licenses, establishing an energy designer co-op, and making them the priority in bids for public projects.

For instance, SMG will help them acquire licenses for new and renewable energy power facility technicians and building energy assessors so that they can enhance their qualifications and secure jobs in the public sector involving the installation of micro PV power plants and external air conditioner covers.

② Creation of Local Jobs in the Area of Energy Services

SMG plans to set up 25 “Local Energy Hub Centers” that offer comprehensive energy services to citizens by 2017. Services provided by the centers will include the installation, monitoring, and maintenance of energy facilities, installation of LED lights and PV power plants, supply of information on various items, joint purchases, and product displays.

The hub centers will use the office space of various civic organizations. When necessary, they can lease space in public agencies. They will maintain close cooperative relations with the Green Consumer Network, Eco-Hub, and Seodaegol Energy Self-Reliant Village. Their business areas will expand to corporate service sales network and energy co-op service.

Northern Seoul Green Consumer Alliance	Eastern Seoul Green Consumer Alliance	Eco-Hub	Seongdaegol Village
			

SMG also plans to create jobs and improve building energy efficiency through the activation of “Green Interior Shops.” It will ensure that excellent interior businesses are selected so that they can offer customers the most energy-efficient work using quality eco-friendly materials and deliver the most up-to-date information on BRP, for instance. For registered interior businesses, SMG will provide education on LED, insulated windows, high-efficiency boiler facilities, and eco-friendly construction materials. SMG will grant the "Green Interior Shop Certificate” to businesses that have completed education and achieved outstanding performance.

4 Energy-Sharing, Warm Communities

Goal: Presentation of Basic Rights to Energy Welfare and Realization of Sharing through Communities

Responsibility for Energy Welfare	Citizen Engagement	Transfer & Efficiency	Communities
Energy Welfare Ordinance - Korea's first	100,000 citizens participating in the Welfare Fund	Insulation work for 1,100 low-income households	200 energy self-reliant villages

Current Status

○ 10.3% of the total households in Seoul are energy-poor, spending more than 10% of their income on energy. Their fuel costs are estimated to be around 4.7 times higher than those of the city's average households because they rely on relatively expensive energy (LPG and kerosene) and low-efficiency electronics.

○ The country lacks the legal framework, and the central government continues to adhere to the centralized energy welfare delivery system without going through local governments by implementing voucher and fuel cost support on its own through the "Korea Energy Foundation."

Basic Directions: Enhancement of Foundation for the Seoul-Type Energy Industry and Job Creation

○ SMG is committed to realizing its own energy welfare policies in keeping with the 20th anniversary of full implementation of local self-government in the country. It will enact the Citizens' Charter for Basic Energy Rights and Energy Welfare Ordinance to complement institutionally what is not covered by the central government's welfare policies, such as support for occupants of government-subsidized rental houses.

○ SMG will promote energy conversion projects including support for residential energy efficiency and solar power expansion while offering energy vouchers and direct subsidy of energy costs so that the energy-poor can survive any energy crisis.

○ SMG will enhance its capacity to implement its various energy welfare policies through the cultivation of energy welfare social workers and by conducting regular surveys among them and enhancing the competency of Residential Welfare Support Centers in the area of energy.

○ Energy welfare entails huge financial commitment. Thus, SMG will continue to pursue community-based approaches to the issue in cooperation with the private sector.

1 Securing Energy Welfare Rights through Institutional Arrangements

① Enactment of the “Energy Welfare Ordinance” and Institutionalization of Support for the Energy-Vulnerable

SMG plans to lay the institutional foundation for universal energy welfare for all citizens as their basic rights. It will work out a draft for the relevant ordinance in 2015 and have such passed in 2016 when it will make an Energy Welfare Declaration.

The contents of the ordinance include the responsibility of SMG for energy poverty, eligibility for support, ways to procure funds, and grounds for the energy welfare platform (Fund).

Meanwhile, in 2014, SMG will conduct the "Survey among the Energy-Poor of Seoul” regarding their housing environments, income status, and energy usage to use the data for its energy welfare policies.

② “Energy Welfare Platform”: A Virtuous Circle Where Energy Saving Leads to Energy Sharing

SMG will create the Energy Welfare Fund with citizens who will be deeply involved in the creation, operation, and distribution concerned. Specifically, the fund will be created through citizens’ donation of profits from the production and conservation of energy in relation to the solar power business, LED, BRP, and Eco-Mileage. The fund will be used for the energy-poor.

The raising of funds as well as their management and distribution will be handled by the Citizen Council composed of 100 citizens – in collaboration with civil society and professional organizations such as the Seoul Council on Social Welfare and Community Chest of Korea – for the establishment of platform and fund raising by 2015 and gradual expansion of citizens' participation to 100,000 citizens by 2018.

Citizen Engagement		Citizen Rights		Sustainable Fund
‣ Participants in PV power plants, LED business, and Eco-Mileage	+	‣ 100-person Citizen Council (fund raising, management, and distribution)	→	‣ Laying the foundation for fund raising through the Energy Welfare Ordinance ‣ Cooperation with professional fund-raising organizations

③ Energy Support for Low-Income Households: Energy Conversion + Direct Emergency Support

SMG will help the energy-poor improve their energy efficiency and reduce their energy costs. It will promote BRP for a total of 150 senior citizen centers and community welfare centers and enhance the insulation of the facilities including their windows. It will replace all the lights at 750 social welfare facilities with LED lamps using its budget.

SMG will also replace the lights of 120,000 households entitled to National Basic Living Security benefits with LED lamps free of charge by 2018 to help them reduce their electricity bills.

For a total of 1,100 low-income households, SMG will continue to improve their energy efficiency until 2018. It will shift its focus from temporary service like wallpapering and replacement of floor mats to home repairs including the enhancement of insulation and window replacement. It will improve the energy efficiency of a total of 115,000 public rental housing units by 2018 (23,000 unit per year) through the replacement of balcony windows, elevators, security lights, and boilers with the most energy-efficient products.

Meanwhile, SMG will continue to guarantee the underprivileged their rights to access basic energy benefits – including emergency aid for heating costs – to help them survive the freezing cold in winter. It plans to expand the beneficiaries to single-parent households, households with handicapped members, and lowest-income households.

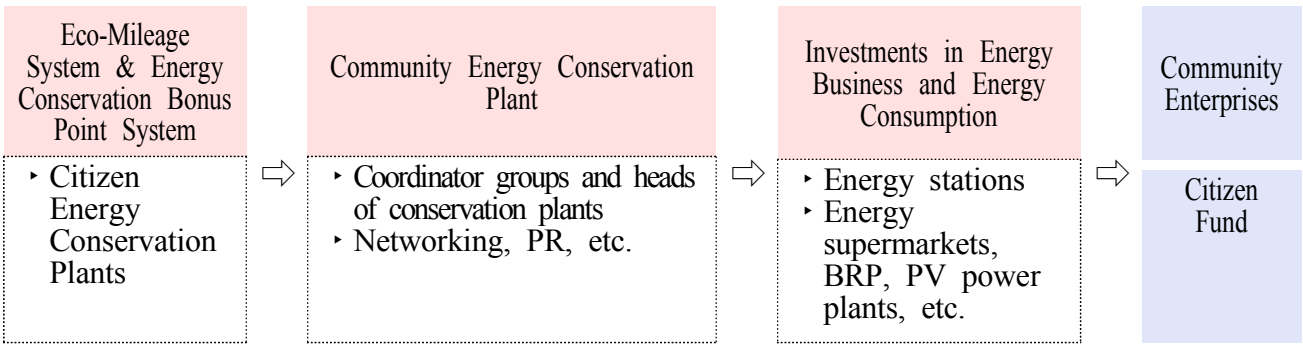
2 Laying the Foundation for Local Energy Communities

① Continuous Expansion of "Energy Self-Reliant Villages" as Hub for Local Energy Governance

SMG plans to convert energy self-reliant villages that simply consume energy into communities that create profits through energy efficiency and green energy production and implement sharing in connection with energy welfare.
Specifically, SMG will increase the number of such villages from 15 in 2014 to 200 by 2018. It will carry out branding for various projects tailored to the characteristics of the villages. Special focus will be placed on the major projects of the city such as mini-PV power plants, BRP, LED, and energy consulting service. It will also encourage the villages to build a network and support one another for their mutual growth.

For instance, Sipjaseong Village will turn into a community specializing in energy production through the installation of PV power plants at all households and wind-powered street lamps and creation of a solar-powered landmark street. On the other hand, Seongdaegol Village will focus on energy jobs. It will build village enterprises such as energy supermarkets and energy cafes and create energy-related jobs including energy consultants and counselors for home energy efficiency improvements.
On top of that, SMG will expand the Citizen Power Conservation Plant Project and create a virtuous circle of energy ecology in various communities. It will launch a pilot project in two locations in 2014 and expand the project to ten places in 2015 before spreading it across the city.

Citizen Energy Conservation Plants will have the incentives provided to members of Eco-Mileage – an action group for energy conservation – re-invested in village energy projects so that they could be used with higher value-added for communities. Hub groups are selected for each community. Heads of energy conservation plans are trained as coordinators. Each community will run an "Energy Station" that will offer energy recharging and other energy-related services. The plants will lay the groundwork for investments in energy projects through adjustments of the Eco-Mileage system and implementation of the energy conservation bonus point system.



② Activation of Community-based Energy Conservation Campaigns

SMG will cultivate community energy activities to help citizens internalize energy conservation and implement it in their daily lives. Each year, it will train 20,000 children and adolescents as Energy Guardian Angels who implement energy conservation at home and school. It will produce 10,000 Green Leaders as missionaries for green life annually. The leaders will create a network, and they will eventually be encouraged to form a co-op among themselves.

Meanwhile, SMG will continue to expand its Energy-Saving Model Shops in collaboration with civil society for the purpose of helping shop owners conserve energy systematically. It plans to increase the number of shops from 2,000 in 2014 to 12,000 in 2018.

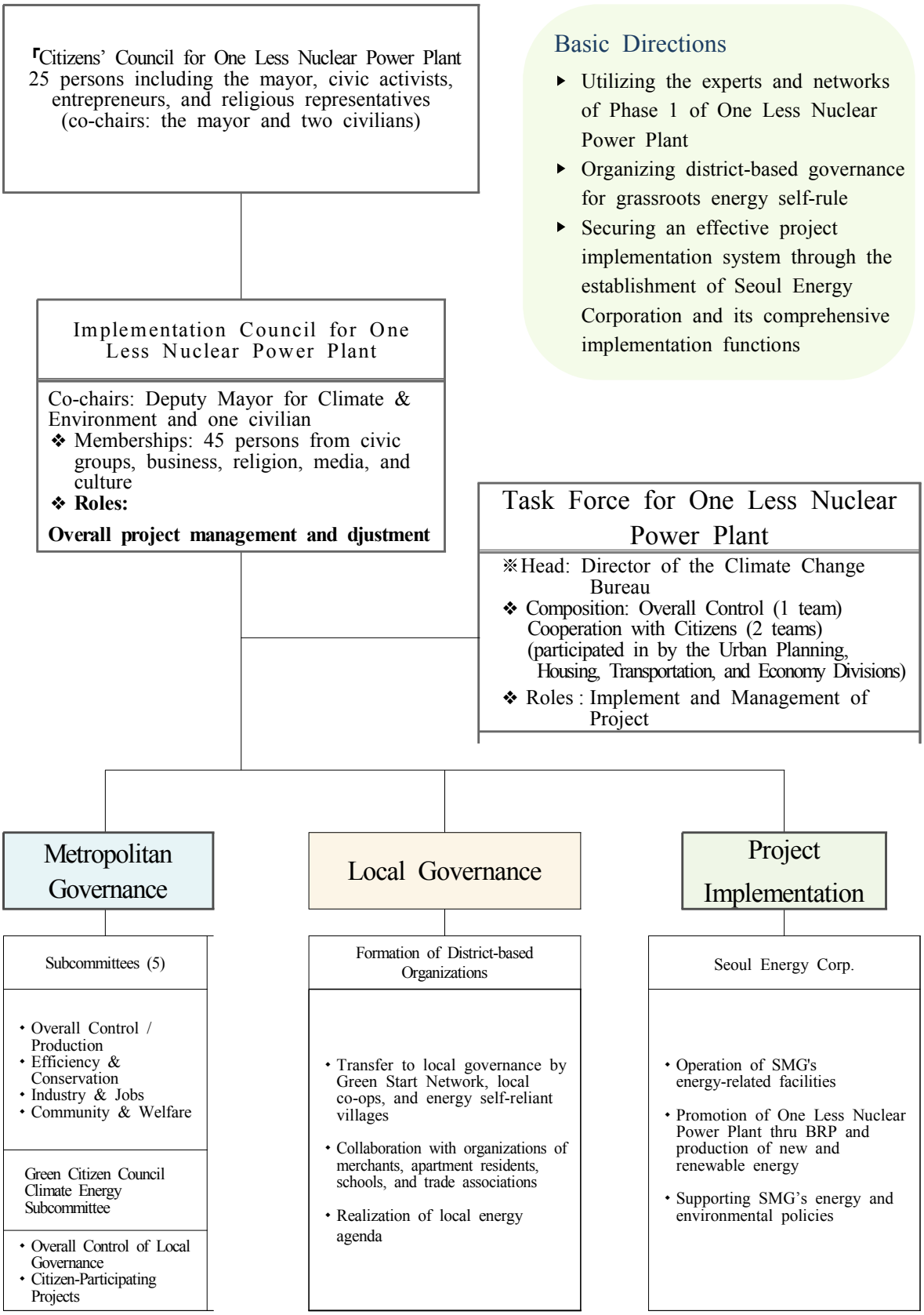
SMG will promote the creation of "Energy Conservation Streets" under the initiative of local organizations including merchants' associations. Following the pilot project along Sinchon Street in the Seodaemun district in 2014, it plans to

expand the project to more than five locations in 2015. In 2014, through “the One Less Nuclear Power Plant Space Expansion Project” in Sinchon-ro, the Sinchon Merchant Association, Seodaemun Socioeconomic Council, and Sinchon Maeul Net will form a voluntary network and implement One Less Nuclear Power Plant policies.

Meanwhile, SMG will join forces with companies and wage the “One Company, One Street” and “Warmhearted Energy Prosumer” campaigns. It will assist co-ops and non-profit organizations with energy know-how in carrying out PR and installing energy production and energy conservation facilities along the streets in cooperation with companies. In particular, through the “Warmhearted Energy Prosumer” campaign, SMG will link companies to areas with high concentration of energy so that the former will perform home insulation work for and supply energy-efficient products to the latter.

SMG will also promote the connection of the “Making Honest Apartments” project and various energy conservation and energy efficiency programs to reduce energy consumption by multi-unit dwellings and bring down residents’ energy bills while offering various incentives such as BRP subsidy.

Ⅳ Implementation Systems



Basic Directions

- Utilizing the experts and networks of Phase 1 of One Less Nuclear Power Plant
- Organizing district-based governance for grassroots energy self-rule
- Securing an effective project implementation system through the establishment of Seoul Energy Corporation and its comprehensive implementation functions

1 Establishment of Energy Collaboration System through “Seoul Energy Governance”

① Strategies to Establish and Run Citizen-Centered Energy Governance

SMG plans to carry out an energy culture overhaul and create jobs at the community level in three stages: development of local hubs, local agenda setting, and networking. For stage 1, SMG will discover and train local leaders for the development of energy policies. For stage 2, it will work out the energy code of conduct – taking into account the local characteristics – and identify suitable specialization projects like solar energy and LED. For stage 3, SMG will strengthen the competency of local leaders through public programs and promote networking with resident organizations and schools.

Stage 1: Development of Local Hubs	Stage 2: Local Agenda Setting	Stage 3: Networking
‣ Discovering and training local leaders for the development of energy policies	‣ Presenting the energy code of conduct considering the local characteristics ‣ Identifying suitable specialization projects like solar energy and LED	‣ Enhancing local leaders’ competency through public programs ‣ Activation of networking with resident organizations, schools, etc.

In addition, SMG will promote the development of metropolitan governance and local governance at the same time and pursue systematic links between the two. For metropolitan governance, it will redefine the roles of the Implementation Council for One Less Nuclear Power Plant and Green Seoul Citizen Committee so that the former will take charge of various policies and the latter will oversee citizen-participating programs and support local governance in policies and finance. For local governance, SMG will focus on local leaders’ networking and competency development while discovering and implementing community-based local energy agenda.

② Organizing Community-based Energy Governance and Expanding Collaboration

To activate community-based energy governance, SMG will discover and support a diverse set of policy participants who will develop new policies. To this end, it will cultivate existing energy-related organizations – such as district branches of the Korea Climate & Environment Network, Energy Hub Center, Energy Co-ops, Energy Self-Reliant Villages, and Green Campus University Community – as hubs for the creation of local energy governance; they will join hands with community-based resources such as merchant associations, apartment resident councils, and green shops and form a new energy network.

SMG will promote community-centered, governance-type bids for various municipal programs such as a community energy alternative project, with priority given to competent local organizations instead of individuals. Starting 2015, SMG will award 60% of its bid projects to those linked to local resources. Through social impact funding-type bids, it will increase its existing financial support by 50% as part of its compensation for excellent performance.

With regard to local energy policy projects, SMG will shift its focus from individual projects like home energy consultants and green leaders to community-based, integrated programs promoted by competent organizations. It will organize energy consultants and green leaders into co-ops (non-profit organizations). Beginning 2015, it will refocus its energy-related programs so that energy consultants will play the key role for households and energy guardian angels for schools. Moreover, it will expand the participation of local organizations in energy projects – such as installation of PV power plants and replacement of lights with LED lamps in welfare facilities, for instance – so that they can generate revenues and develop into energy service job hubs.

SMG will work out and implement the “Energy Code of Conduct 2020,” which is essential for the successful implementation of energy agenda by communities. It will support local organizations in their discovery of energy slogans and setting of energy agenda that mirror the characteristics of their communities in connection with various events initiated by civic groups or diverse cultural events hosted by self-governing districts.

Between July and December 2014, SMG will complete local governance and energy agenda. Starting 2015, it will implement energy agenda items in collaboration with local communities and keep monitoring the results. As major programs, it will launch the Energy Conservation Street in cooperation with local shopkeepers, One Company One Street campaign in collaboration with enterprises, Zero Energy-Poor Campaign through the utilization of local energy sources, and Energy Fair including a parade.

④ Policy Debates for Phase 2 of One Less Nuclear Power Plant with the Attendance of Citizens and Experts from Home and Abroad

SMG plans to launch the annual "Seoul International Energy Conference" with the attendance of overseas experts in energy issues to analyze the worldwide energy trends and share honest opinions on the directions of the city's energy policies. In 2014, it is scheduled to host – for four days on 11 ~ 14 November at the multipurpose hall of City Hall – the inaugural conference on Phase 2 of One Less Nuclear Power Plant.
Between July and December 2014, SMG will launch a series of conferences titled "Grand Panorama Citizen Conferences" to share views on Phase 2 of One Less Nuclear Power Plant with citizens and motivate them to participate in the implementation process of Phase 2. The grand conferences will actually be held in various formats including town hall meetings, World Cafes, Public Opinion Listening Workshops, and Citizen Conferences.

⑤ Launch of the "Netizen Committee on One Less Nuclear Power Plant"

SMG will launch the "Netizen Committee on One Less Nuclear Power Plant" in the second half of 2014 to hear netizens' opinions on its policies regarding the initiative. Citizens can express their views through their posts on the website of One Less Nuclear Power Plant or comments or indication of approval/disapproval of other citizens' posts or comments. SMG plans to compile the netizens' views in a format similar to that of Wikipedia and reflect them on its policies.

SMG will encourage those citizens who have been active in its various Public Opinion Listening Workshops and Panorama Forums to join the Netizen Committee. It plans to arrange for citizens to share online their experiences with energy products, exchange information on the energy efficiency of various products, and present their personal feelings about energy products as well as their experiences with the One Less Nuclear Power Plant initiative. SMG will also launch an online policy community in association with existing online childcare, housewife, and local communities

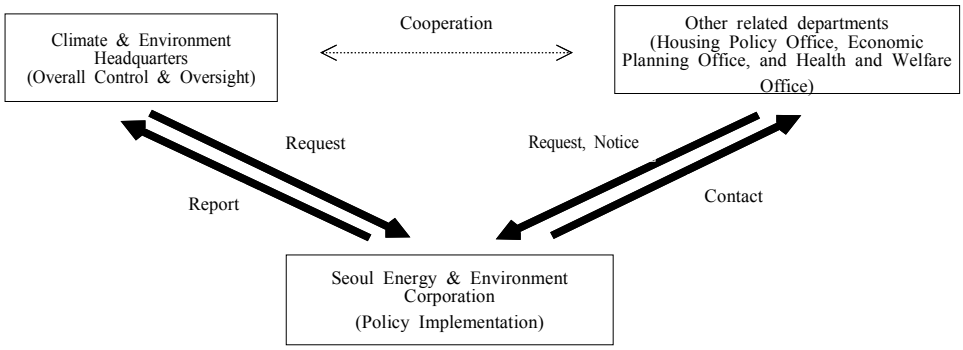
2 Establishment of Energy Administration Infrastructure and Systems

① Establishment of "Seoul Energy Corp. (tentative name)" to Improve Performance

Phase 1 of One Less Nuclear Power Plant was promoted by a number of organizations in City Hall such as Climate & Environment Headquarters, Housing Policy Office, and City Transportation Headquarters. The need for a separate exclusive organization was pointed out by many so that energy conversion could be promoted regardless of changes in so many divisions. Most notably, its International Energy Advisory Council recommended that SMG consider the establishment of an organization in charge of efficient, effective energy services for citizens and corporation through its declaration.

SMG has decided to set up "Seoul Energy Corp. (tentative name)," which will be responsible for the establishment and implementation of its diverse energy policies with experts specializing in energy policies and policy implementation. It plans to finish institutional preparations by the end of 2015 and launch the company in 2016. SMG will take full advantage of the Integrated Energy Business Division of SH Corporation in the organization of the new public company while trying to balance the profitability and public interests of its energy services carefully for the citizens. It will do its best to come up with the best solution.

Specifically, Seoul Energy Corporation will operate the city's energy-related facilities such as integrated energy facilities and resource recovery facilities and promote the One Less Nuclear Power Plant initiative including improvements in energy efficiency and expansion of new and renewable energy. It will also be responsible for the cultivation of energy experts and support for village energy companies while finding markets for new energy services such as LED emotional lighting and ICT energy technologies.



② Establishment of Promotion & Cooperation Systems for the One Less Nuclear Power Plant Initiative between Different City Hall Departments

Phase 1 of One Less Nuclear Power Plant was led by the Climate & Environment Headquarters, but other departments implemented their own energy tasks independently. Since Phase 2 needs to go beyond SMG's efforts for energy production, efficiency, and conservation and reflect its energy values on all of its policies, the Climate & Environment Headquarters will take charge of all energy matters, with other departments fully supporting its efforts.

For full cooperation among different organizations on the establishment and implementation of various energy policies, the Implementation Council for One Less Nuclear Power Plant is joined by directors of various Offices, Headquarters, and Bureaus of SMG; the Promotion Bureau for One Less Nuclear Power Plant will be participated in by deputy directors of those organizations. In addition, SMG plans to hold a large-scale conference twice a year to check the progress of Phase 2.

③ Leadership for the Localization of the Country’s Energy Policies

Each year, SMG will publish a white paper on Phase 2 for the systematic modeling of all the policies involved in the initiative and share the information with other local governments in the country. In 2015, It will form an inter-city energy cooperation network in an attempt to pursue shared growth between local governments and realize a shift in the leadership of the country’s energy policies from the central government to local governments from the long-term perspective.

Meanwhile, SMG will promote quality energy production programs in the country’s rural areas with favorable conditions for the production of wind power, solar energy, and small hydro power through financial assistance. It will implement a pilot project for a wind farm at the World Scout Jamboree campsite in collaboration with the government of Gangwon Province. SMG will finance the project through the Seoul-Gangwon Citizens' Shared Growth Fund, investments by the private sector, and Seoul Climate Fund.