

# CSV Strategies

— Creating Shared Value through Business —



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### Promoting net-zero-energy housing Page 23

Contribute to creating more healthy life years for customers and to the environment by realizing high-quality living not constrained by energy problems



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## Promoting net-zero-energy housing

Contribute to creating more healthy life years for customers and to the environment by realizing high-quality living not constrained by energy problems

### Main stakeholders:

Customers, partner companies (equipment manufacturers, etc.), energy supply companies

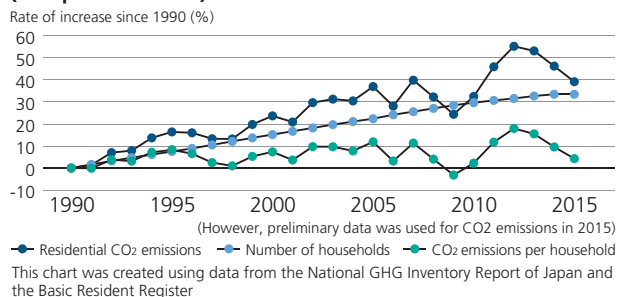
## Backdrop

### Japanese Government Targeting Implementation of ZEH as the Standard for Newly Built Housing by 2020

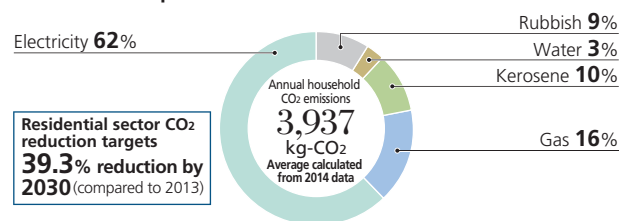
CO<sub>2</sub> emissions must be reduced globally to control global warming. At COP21 (the Framework Convention on Climate Change, 21st Session of the Conference of the Parties to the United Nations) held in Paris in 2015, Japan committed to reducing greenhouse gas emissions 26% by 2030 compared to 2013 levels. To achieve this, we must achieve a substantial 39.3% reduction in the residential sector.

To reduce home energy consumption and control CO<sub>2</sub> emissions, the Japanese government is promoting the spread of net-zero-energy housing (ZEH) enabling zero net energy consumption through the utilization of high heat-insulating capabilities and energy-saving devices, as well as photovoltaic systems and fuel cells. The government is targeting having the majority of newly built housing be ZEH by 2020.

### Trends in CO<sub>2</sub> Emissions in the Residential Sector (Compared to 1990)



### CO<sub>2</sub> Emissions per Household



Excludes automobile (gasoline and oil) data from the National Institute for Environmental Studies and the Greenhouse Gas Inventory Office of Japan

## Approach

### Our Goal

### Promoting the Green First Strategy Focused on Environmental Friendliness, Comfort and Economy

Sekisui House's responsibility as a housing manufacturer is to contribute to the resolution of important social issues including energy and environmental problems while aiming to promote sustainable business.

Positioning energy conservation as one of our core functions, we proactively propose eco-friendly Green First homes as well as energy-saving and energy-creation remodeling and renovation for existing homes.

In 2008, we announced our 2050 Vision, which targets zero CO<sub>2</sub> emissions over the entire housing product lifecycle.

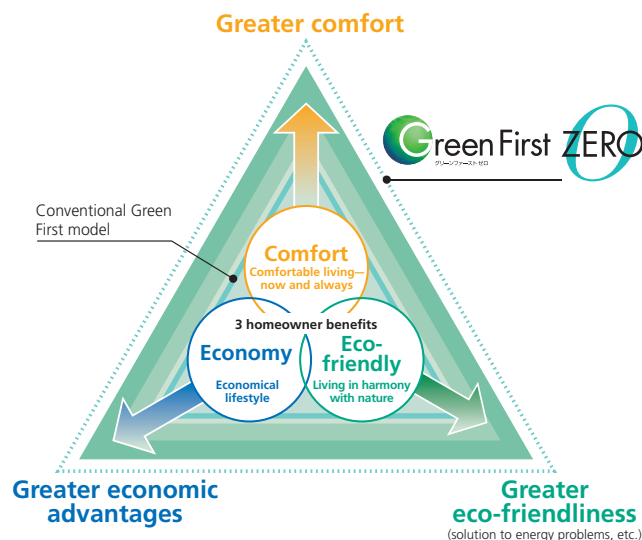
We signed the Joint Declaration in the Building and Construction Sector formulated at COP21 in 2015, as well as committed to the Paris Agreement.

We aim to increase comfort and affordability of our housing while significantly reducing energy consumption and contributing to the achievement of national objectives for the reduction of greenhouse gas emissions. We aim to achieve the COP21 residential sector commitments with both newly built and existing homes.

## Aim for Zero CO<sub>2</sub> Emissions throughout the Entire Housing Product Lifecycle

Since 2009, we have been focusing on promoting the spread of eco-friendly Green First homes, which significantly reduce impacts on the environment. In 2013, in anticipation of government policies promoting ZEH, we launched sales of an upgraded version, Green First ZERO housing. Green First ZERO housing offers a high level of comfort, affordability, and eco-friendliness, by substantially limiting the amount of energy consumption with high insulation and highly efficient energy-saving equipment, while also creating more energy than is consumed with high-capacity photovoltaic systems and Ene-Farm fuel cells.

To reach our goal of zero CO<sub>2</sub> emissions throughout the housing product lifecycle by 2050, we will continue to pursue diverse initiatives.



### Action Policies

#### 1 Expanding Net-Zero-Energy Housing

We will develop aggressive proposal activities aimed at increasing the ratio of Green First ZERO sales to 80% by 2020. We will also promote ZEH in rental housing Sha Maison and condominiums.

Furthermore, we will aim to meet the COP21 residential sector commitment including for our existing housing.

**Increase ratio of Green First ZERO newly built detached housing to 80% by 2020**

**Reduce CO<sub>2</sub> emissions from newly built homes and existing low-rise rental apartments by 39.3% by 2030 (compared to 2013)**

#### 2 Strengthen Energy-Saving and Energy-Creating Proposals for Remodeling

We are also promoting Green First renovation for existing homes to provide comfortable, eco-friendly living. Energy saving through improved insulation and the latest equipment combined with energy creation using photovoltaic systems and fuel cells should significantly reduce CO<sub>2</sub> emissions.

Three Sekisui House Remodeling companies handling our detached housing, seven Sekiwa Real Estate companies handling rental housing, and nineteen Sekiwa Construction Group companies handling general detached housing and condominiums are conducting proposal activities. We are working to further improve communication with our customers, such as by establishing remodeling and renovation corners in *Sumai no yume koje* centers nationwide.

### Impact of These Activities on the Company

ZEH housing significantly reduces CO<sub>2</sub> emissions and utility expenses, while supporting more comfortable living and increasing healthy life years of homeowners. We emphasize these merits to customers in an attempt to expand sales of homes with high added value.

In addition, actively promoting the remodeling and renovation of existing homes to be energy saving and energy creating is expected to expand business by stimulating potential demand as well as contribute to our inventory of quality housing.

### Risk Management

#### Risk 1

#### Increased costs in line with making homes compliant with national ZEH standards

#### Our response 1

Our detached homes meet high standard specifications, so upgrading them to ZEH can be achieved at comparatively little extra cost. Furthermore, as a major housing manufacturer, we control costs through central purchasing, which reduces the cost burden for the buyer. Additionally, with ZEH specifications, utility expenses are significantly lower, thus the increase in costs can be recovered after a certain amount of time.

#### Risk 2

#### Declining demand due to decreases in subsidies or power purchase prices

#### Our response 2

We will enhance employee awareness and proposal capabilities and communicate to customers not only the economic merits of ZEH, but also the increased quality of life in terms of health and comfort, in an effort to stimulate needs. We absorb part of the initial costs as Company environmental promotion expenses to lessen the financial burden on customers.



# State of Progress

## 1 Expanding Net-Zero-Energy Housing

### Activities Report

#### Promoting the Spread of Green First ZERO

We are making efforts to promote the spread of Green First ZERO in anticipation of the Japanese government objective of making net-zero-energy housing (ZEH) the standard by 2020. For customers with plans to build a new house, we explain the substantial reduction in utilities expenses and the entirely new level of comfort. We also renovate showrooms for exhibitions and hold seminars for customers, among other initiatives, to emphasize the merits of Green First ZERO.

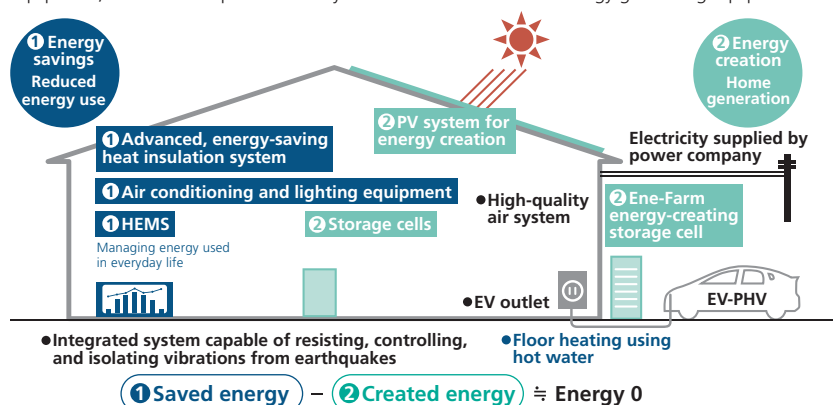
In FY2016 we continued to actively propose that customers receive subsidies under the net-zero-energy house support project. The subsidies are applied to new construction of ZEH

housing and installation of storage cells and other equipment. Sekisui House also acts as an agent to assist with the subsidy application process. We worked to develop a system to facilitate subsidy applications, conduct study sessions for employees, and create manuals.

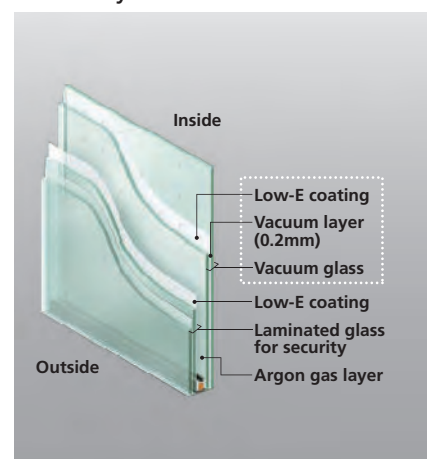
Furthermore, from February 2016, in the windows of our new detached homes we started using multi-layered vacuum-glazed glass, which has a vacuum layer between multiple glass sheets. Since windows using this glass have more than double the insulation capability of conventional multi-layered windows, we are further improving energy-saving performance.

#### Green First ZERO Model

We aim to achieve energy-neutral housing through improved insulation and energy-saving equipment, in addition to photovoltaic systems and other advanced energy-generating equipment.



#### Double-Layered Vacuum-Glazed Glass



#### Announced ZEH Initiatives in Line with COP22

In November 2016, at Building Day of COP22 (the 22nd Session of the Conference of the Parties) held in Marrakech, Morocco, Sekisui House conducted a presentation as a global example regarding our promotion of Zero Energy Housing (ZEH). We presented an overview of our business and the spread of ZEH, as well as the resulting reduction in CO<sub>2</sub>. Sekisui House was the only private company that made a presentation at this session.

Many country representatives that participated in the session were impressed with our ZEH initiatives, and we received questions and comments such as, "I was surprised that Sekisui House had already almost reached the levels stipulated under the Paris Agreement. These initiatives need to be shared," and "Fascinating. I wonder if my country can also implement the thinking of Sekisui House's efficient housing production."



Managing Officer Kenichi Ishida giving the presentation



Presentation content

## Making Condominiums into Net-Zero-Energy Housing: Building the First ZEH Condominiums in Japan

Collective housing comprises roughly half of all housing starts, and CO<sub>2</sub> emissions account for about 30% of all residential sector emissions. Yet collective housing has relatively less roof space per unit, so it is difficult to install enough photovoltaic systems to reduce CO<sub>2</sub> emissions.

Amid this environment, Sekisui House, which develops Grande Maison condominiums, is planning to build a next-generation ZEH condominium in Nagoya City. Scheduled for completion in spring 2019, this building is expected to be Japan's first condominium where all units meet the national ZEH standards, with various energy-efficient equipment and improved window and door insulation, as well as photovoltaic systems generating an average of 4kW and Ene-Farm fuel cells installed at each unit.

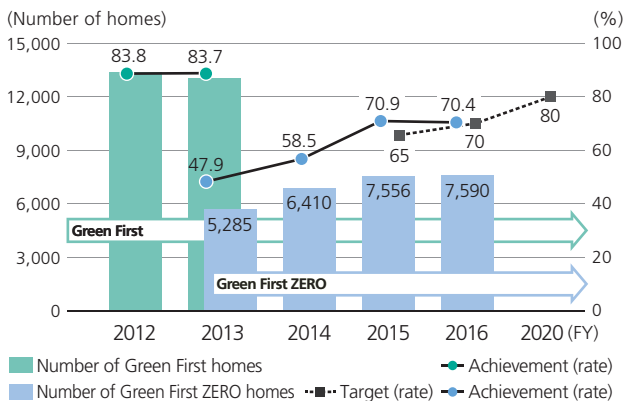


Three-story residential-type ZEH condominium to be constructed in Nagoya City

## Key Performance Indicators (KPIs)

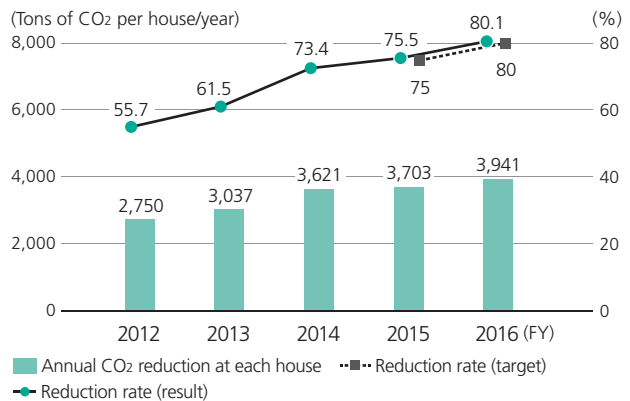
Indicator	Unit	FY2012	FY2013	FY2014	FY2015	FY2016	Definition and remarks
Green First ZERO	%	—	47.9	58.5	70.9	70.4	Ratio within Sekisui House detached housing
Amount of CO <sub>2</sub> reduction compared to 1990	Tons of CO <sub>2</sub> /year	42,074	50,256	43,015	41,599	41,877	Reduction of residential CO <sub>2</sub> emissions from new detached homes compared to 1990 levels (amount and %)
Rate of CO <sub>2</sub> reduction compared to 1990	%	55.7	61.5	73.4	75.5	80.1	

### Growth in the Number of Green First and Green First ZERO Homes



Established adoption of Green First eco-friendly housing. From FY2013, targeted achievement initiatives for more advanced Green First ZERO.

### Reduction in CO<sub>2</sub> Emissions Achieved by the Green First Strategy\*

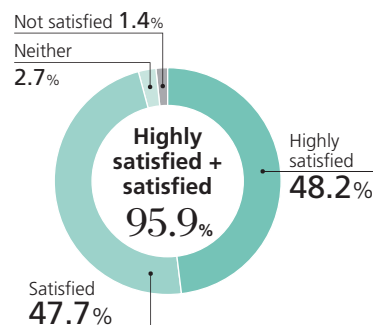


\*Figures are Sekisui House estimates (versus 1990)

### Satisfaction Rate of Green First ZERO Residents

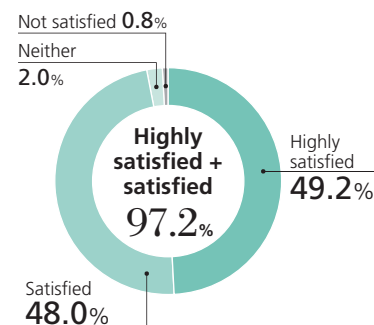
#### Overall satisfaction

(evaluation includes utilities expenses)



#### Satisfaction with housing comfort

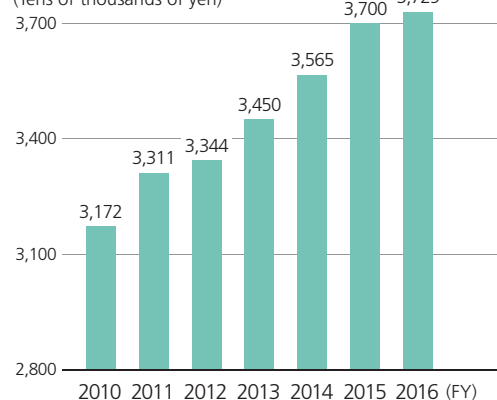
(comfort evaluation)



Note: Survey questionnaire taken one year after move-in (March 2015; N = 516)

### Sales Price per Detached House

(Tens of thousands of yen)



## TOPICS

### Green First ZERO initiatives win the 2016 Minister of the Environment Award for the Promotion of Measures to Cope with Global Warming\*

In November 2016, our Green First ZERO initiatives won the 2016 Minister of the Environment Award for the Promotion of Measures to Cope with Global Warming. Our housing was commended for offering comfortable living while substantially reducing energy consumption, as well as offsetting energy use through advanced energy-generating equipment. We were also recognized for having sold 23,469 houses since its launch and achieving CO<sub>2</sub> reductions of about 100,000 tons per year.

\* Sponsored by the Ministry of the Environment from 1998 as part of the promotion of global warming countermeasures, this award recognizes individuals or organizations with notable achievements in reducing climate change.



Award

## Evaluation

In FY2016, the ratio of Green First ZERO homes was 70.4%, surpassing the target of 70%. The number of newly built detached homes supplied decreased, but the amount of CO<sub>2</sub> reduction per household compared to 1990 was slightly higher. The rate of CO<sub>2</sub> reduction per household compared to 1990 was 80.1% (up 4.6 points YoY), meeting the 80% target.

In addition, the sale price per detached home in FY2016 was ¥37.29 million, up by about ¥6 million compared to 2009, when we started sales of Green First homes.

## Future Initiatives

Sekisui House will strive to expand the sales ratio of Green First ZERO, detached homes offering comfort, economy, and eco-friendliness, to 80% by FY2020, while aiming to implement ZEH in Sha Maison low-rise rental housing and Grande Maison condominiums.

## 2 Strengthen Energy-Saving and Energy-Creating Proposals for Remodeling

### Activities Report

#### Promoting Green First Renovation of Existing Homes

Three Sekisui House Remodeling companies are focusing on Green First Renovation initiatives for customers of our detached housing.

We are promoting Green First Renovation, which involves proposing ZEH features and living spaces, as well as remodeling to save and create energy. We are working to reduce CO<sub>2</sub>

emissions while offering a comfortable lifestyle and an increase in healthy life years.

In FY2016, we boosted our floor, wall, ceiling, and window insulation remodeling product lineup by adding an internal wall heat cover to improve insulation and the RePlus SH sash cover construction method.

#### Energy-Saving and Energy-Creating Remodeling Overview

##### Renovating Door and Window Insulation

We remodel with limited impact on daily life, leaving the existing aluminum sash frame when replacing doors and windows with high-performance thermal barrier and insulation products.

**RePlus SH:** new proposal  
High-performance window sashes and windows installed using a construction method of covering the existing window frame from above offer improved insulation.

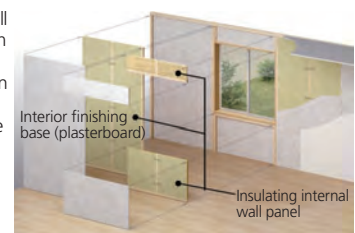


##### Ceiling Heat Cover

We improve insulation capabilities by adding suitable insulation materials to the ceiling. It helps keep the house warmer in the winter and cooler in the summer, improving comfort.

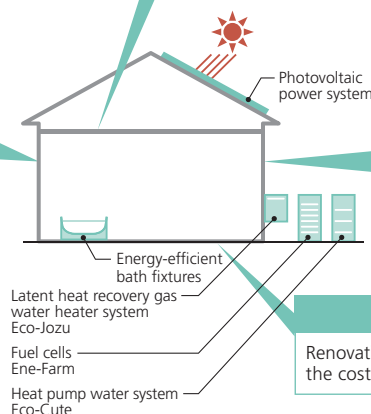
##### Internal Wall Heat Cover: New Proposal

Leaving the existing wall intact, we cover it with a high-performance internal wall insulation panel. As the panel is thin, it does not make the room feel smaller.



##### Underfloor Heat Cover

Renovation without removing the floor reduces the impact on daily life and the cost burden. The insulation makes the floor warmer, increases comfort.



## TOPICS

### Developing remodeling and renovation at *Sumai no yume koje* centers nationwide

At our comprehensive Housing R&D Institute and factories nationwide we are building *Sumai no yume koje* centers, where customers can learn about our housing construction techniques through hands-on experiences. In FY2017, we expect all remodeling and renovation corners at our *Sumai no yume koje* centers to be completed. Customers can see differences before and after remodeling, the techniques of the three Sekisui House Remodeling companies, and a breakdown of energy-saving and energy-creation remodeling that we are promoting.



Before



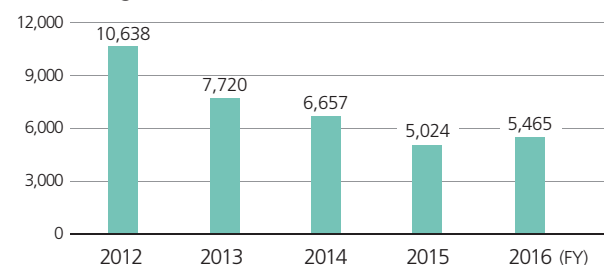
After

## Key Performance Indicators (KPIs)

### Energy Saving and Creation Remodeling Achievements\*

Energy saving and creation remodeling menu	FY2016 achievements
Photovoltaic power system installations	1,185 units
Energy-efficient bath fixtures	3,707 units
Door and window insulation reform	3,263 units
Ene-Farm (residential fuel cells)	490 units
Eco-Jozu (latent heat recovery gas water heater system)	3,140 units
Eco-Cute (heat pump water system)	1,095 units
Underfloor heat cover	1,116 units

### CO<sub>2</sub> Reductions due to Energy-Saving and Energy-Creation Remodeling\* (tons of CO<sub>2</sub>/year)



Note: Sekisui House Remodeling Co., Ltd.

## Evaluation

We have prepared a remodeling menu of high-performance CO<sub>2</sub> reduction and insulation for floors, walls, and ceilings. We have added higher-performance window insulation products to our lineup, and customers are praising our initiatives as helping them save energy while living comfortably and healthily. Installations of our photovoltaic power system declined in part due to the fall in power purchase prices, but installations increased for Ene-Farm fuel cells, part of energy-creation remodeling that includes hybrid power generation. We split Sekisui House Remodeling into three companies in East, Central, and West Japan, and by being firmly rooted in local communities, we are making proposals even more promptly in line with customer needs.

## Future Initiatives

We will continue to strive to promote Green First Renovation to contribute to the reduction of CO<sub>2</sub> emissions from our existing housing. Energy-saving and -generating remodeling, including improved insulation and installation of high-efficiency equipment, is linked to an increase in residents' healthy life years. We will strengthen proposal activities based on the concept of "sukoyaka remodeling" through hands-on centers such as *Sumai no yume koje* nationwide.

### Promoting CO<sub>2</sub> Reductions throughout the Home Lifecycle

Sekisui House ascertains CO<sub>2</sub> emission levels not only when a resident moves in, but throughout the home lifecycle, from the purchase of building materials to factory production,

transportation, construction and demolition. We continually engage in activities linked to CO<sub>2</sub> reduction proposals and implementation.

Indicator	Unit	FY2012	FY2013	FY2014	FY2015	FY2016	Definition and remarks
Total energy input*1	TJ	2,830	3,542	3,039	3,061	2,985	Amount of energy input at the various stages of development and design, factory production, transportation, construction and demolition
CO <sub>2</sub> emitted during development, design, factory production, construction and demolition*1	t-CO <sub>2</sub>	114,780	148,329	126,209	130,482	126,337	Amount of CO <sub>2</sub> emitted at these stages per fiscal year
CO <sub>2</sub> emitted during transportation*2	t-CO <sub>2</sub>	38,959	45,815	37,749	36,499	35,828	Amount of CO <sub>2</sub> emitted at these stages per fiscal year

\*1 Starting in FY2013, energy input by Sekisui House's consolidated subsidiaries in Japan (40 companies) and Sekisui House Advanced Manufacturing (Shenyang) Co., Ltd. was added to the total energy input. Also, starting FY2015, main overseas subsidiaries were added to the total.

\*2 Starting in FY2013, in addition to specified consigners based on the Act on the Rational Use of Energy, the amount of CO<sub>2</sub> emitted during product shipments by Sekisui House Advanced Manufacturing (Shenyang) was added to the total.





## Preserving biodiversity

**Protect ecosystem networks through use of sustainable natural resources that considers impacts of business**

### Main stakeholders:

Suppliers (tree growers, landscapers and wooden building materials manufacturers) and customers

## Backdrop

### Affecting Urban Ecosystems with Landscaping

As greenery declines due to advancing urbanization, greening initiatives are spreading throughout Japan. Effective landscaping in urban areas not only preserves ecosystems, but also invigorates communities by creating relaxing spaces for people, enables the collection of rainwater to prevent urban flood damage and provides a variety of other functions. These various green efforts, known as “green infrastructure,” are now attracting attention as the basis for resolving a wide range of social issues.

Landscaping is an indispensable element of housing. Each year, the majority of landscaping consists of planting garden trees. However, garden and non-native species are often selected for their attractiveness and ease of care. These are not always appropriate for sustaining local birds and insects, nor are they adaptable to Japan’s climate, and they tend to have low resistance to pests. To protect local ecosystems, the selection of tree species for planting must take the ecosystem into consideration.

### The Importance of Ensuring Traceability in Lumber Procurement

Lumber is an important housing material used for structural components as well as on the interior and exterior of homes. Sekisui House uses more than 300,000 cubic meters of lumber each year. However, as wood is a raw material of biological origin, even among the tens of thousands of materials used in housing, ensuring lumber traceability is crucial, especially when considering the complexity of distribution channels.

In recent years, logging exceeding the allowable limit to meet strong demand in foreign countries and logging in prohibited areas such as protected forests, timber theft, and smuggling are becoming major problems. Such illegal logging causes wide-spread destruction of ecosystems and exacerbates climate change, not only adversely impacting the multifaceted environmental protection of forests, but also society, as it harms the lifestyle of local residents, creates instability in the lumber market, and hinders sustainable forest management. Under such circumstances, in Japan the Act on Promotion of Distribution and Use of Legally Logged Wood Products (the Clean Wood Act) was promulgated in 2016, and requirements to use legally logged materials expanded from public procurement to include private transactions.

## Approach

### Our Goal

### Based on Long-Term Scenarios, Promote the Preservation of Biodiversity by Working with Our Supply Chain

Sekisui House, Japan’s largest manufacturer and supplier of prefabricated housing, is also one of Japan’s largest landscape gardeners, planting nearly one million trees each year. From this standpoint, we have set a 2050 goal of maximizing ecosystem networks through business, which involves focusing efforts on planting that contributes to the preservation of local ecosystems and sustainable lumber procurement linked to the protection of

global biodiversity.

It takes time for natural capital and ecosystem to mature or recover. In addition, these initiatives cannot be completed by one company alone. Based on long-term scenarios, we will work with our suppliers to provide customers with rich and comfortable lifestyles while contributing to preserving the environment and creating a sustainable society.

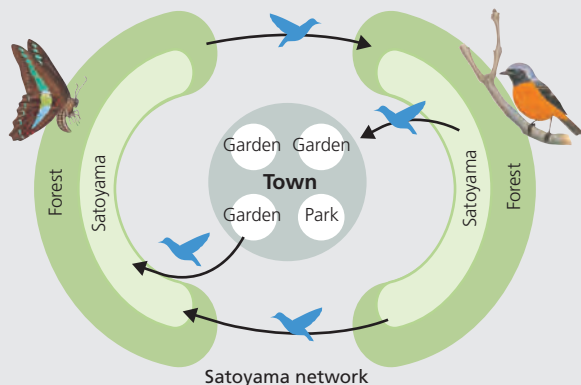


## Action Policies

### 1 Promoting Planting of Indigenous Species in Consideration of Regional Ecosystems through the *Gohon no ki* planning

Since 2001, Sekisui House has promoted gardening and landscaping activities known as the *Gohon no ki* planning. This involves the proactive proposal of indigenous species able to provide a high level of support for local creatures in consideration of the ecosystem as opposed to the frequent and exclusive use of garden or non-native species.

In terms of project implementation, we collaborate with a network of local tree growers and landscapers to ensure the provision of indigenous species where traditionally there have been few available on the market. We will propose to consumers the richness of life in harmony with living creatures and the significance of environmental conservation.

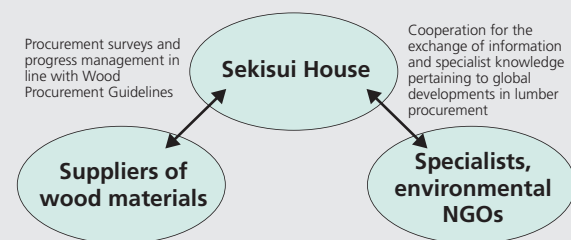


### 2 Promoting the Use of Legal and Sustainable FairWood Lumber

Sekisui House procures FairWood\* lumber and wood products that are friendly to local communities and the forest environment in logging areas to enable the use of sustainable lumber.

FairWood procurement is legal and based on 10 Wood Procurement Guidelines established with an even greater consideration of ecosystems and resident lifestyles in logging areas. Each year, procurement surveys are conducted targeting approximately 50 suppliers of wood materials to ascertain where their timber is felled and milled and to confirm its legality. This information is then converted into numerical data used to manage ongoing progress in this area. These initiatives attempt to expand the use of FairWood by enhancing supplier consciousness of procurement routes while promoting awareness among trading companies further upstream in the supply chain.

\* Advocated by the Global Environmental Forum and FoE Japan, an international environmental protection NGO.



## Impact of These Activities on the Company

Promotion of the *Gohon no ki* planning enables the realization of housing with high home value through proposals to customers offering comfortable lifestyles surrounded by abundant nature. In addition, it strengthens the recognition that housing appearance that changes over time due to green growth is helpful to enhancing home value—even in the case of green common areas in rental housing—creating rich urban spaces.

In addition, in the area of lumber procurement, by having each supplier follow our guidelines we are raising awareness about the procurement process and increasing the accuracy of traceability data. As a result, the market for high-quality FairWood steadily expands leading to the spread of sustainable lumber.

## Risk Management

### Risk 1

**Proposals similar to *Gohon no ki* planning spread throughout the industry, leading to a relative decrease in the value of our proposals.**

### Our response 1

We will make use of the many years of collaborations with our landscaper network to aggressively promote tree species proposals in line with market needs, while attempting to differentiate ourselves through total exterior designs delivering higher customer satisfaction by improving our design proposal capabilities and strengthening our construction system. As a result, the continued proposal of new value will further drive the ecosystem-friendly greening market.

### Risk 2

**Tighter international regulations will restrict logging, exports and distribution, disrupting the stable procurement of lumber.**

### Our response 2

As logging area trends and other breaking news is monitored by local environmental NGOs, we will obtain information from a network of global environmental NGOs and promptly share it with suppliers of wood materials so that they can make preferential supply arrangements for us.

# State of Progress

## 1 Promoting the Planting of Indigenous Species in Consideration of Regional Ecosystems through the *Gohon no ki* planning

### Activities Report

#### Ongoing Promotion of the *Gohon no ki* planning

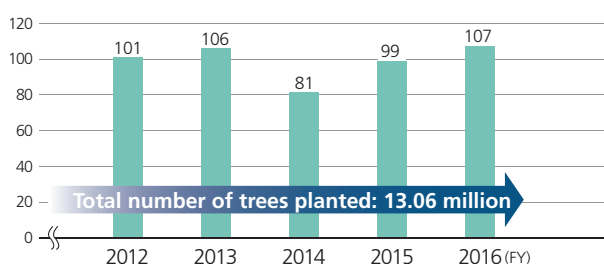
Based on our *Gohon no ki* planning, we promoted planting of trees considering regional ecosystems. In FY2016 we planted 1.07 million trees in the yards of our detached houses and

collective housing, meaning we have planted a total of 13.06 million trees from 2001, when we launched this initiative.

#### Key Performance Indicators (KPIs)

Indicator	Unit	FY2012	FY2013	FY2014	FY2015	FY2016	Definition and remarks
Number of trees planted annually	Tens of thousands	101	106	81	99	107	Number of trees planted in Sekisui House gardening and greening

Number of Trees Planted Annually (Tens of thousands)



### Evaluation

A decrease in the number of detached housing starts is causing a decline in the number of trees planted. However, customers have come to appreciate the benefits that greenery provides—such as comfort, a distinctive appearance, and townscapes that grow more attractive over time—even for rental housing and condominiums, which has promoted an increase in tree planting and higher quality greening proposals.

In line with this, FY2016 sales of our exterior construction work business, which includes greening and tree planting, grew to ¥67.7 billion, up over 10% year-on-year.

### Future Initiatives

The spread of highly insulated sashes has further expanded openness enabling better views of gardens, which in turn enhances property value and leads to significantly enhanced homeowner comfort.

To this end, we continue to conduct surveys to better understand the comfort that greening through our *Gohon no ki* planning provides homeowners, as well as to record the butterfly varieties in customers' gardens in cooperation with homeowners nationwide. The survey, which is unusual in Japan, looks at a wide variety of butterfly species in individual gardens to promote the visualization of ecosystem preservation and customer comfort.

### TOPICS

#### *Mushinan* won Top Prize at the Garden Contest

At the Garden Contest held in October 2016 at the Hibiya Park Gardening Show, our Group's piece, *Mushinan*, won the top Minister of Land, Infrastructure, Transport and Tourism Award.



We created a charming space by reflecting the abundant nature as seen in city life.

### VOICE

#### Landscapes from the *Gohon no ki* planning

While walking through cities with lush greenery, I can hear birds chirping, and it makes me feel content. Traditionally, Japanese homes were built on spacious properties with large gardens, creating residential streets overflowing with greenery. In the 1960s, newly developed residential properties also included gardens where trees were planted that have grown to create rich natural environments. Yet now with the increase in nuclear families and the rising price of land, economic rationalization has taken precedent; properties are subdivided without leaving a single tree and many residential areas have only dull parking spaces. Even one tree would be better than nothing. Even if there is limited space, I believe we should be putting our energy into designs that make buildings beautiful. As demonstrated by this winning piece, Sekisui House understands the characteristics of trees and thinks of suitable building materials and placement, cultivating techniques to beautifully reflect these aspects. I anticipate its role as a leader in emphasizing the creation of landscapes in cities through its *Gohon no ki* planning.

Landscape Architect

**Hachiro Sakakibara**

Hibiya Park Gardening Show  
Garden Contest, Garden Division  
Division Review Committee Head



## 2 Promoting the Use of Legal and Sustainable FairWood Lumber

### Activities Report

#### Proactively Procuring FairWood Lumber with a View to Zero Deforestation

In line with our Wood Procurement Guidelines created in April 2007, we continue with FairWood lumber procurement initiatives, toward the fair procurement of wood sourced with consideration to the environment. These guidelines are divided into 10 wood procurement policies that take into consideration legality, biodiversity, economies of production areas, and lifestyles of residents of logging areas. Each wood product is classified into one of four ranks based on its total score from each policy. We are pushing ahead with FairWood procurement by using fewer low-ranked wood products and more Rank S and Rank A

products. In addition, in consideration of cultivating communities' forestry we do not set procurement targets for the sole adoption of certified wood. Still, certified wood (including certified processed wood) accounts for 63% of all of our wood materials including for interior installation.

In line with the enforcement of the Clean Wood Act, we flagged Zero Deforestation as a new long-term vision, recognizing that we need to be even more proactive as a company that has led the housing industry in sustainable wood procurement.

#### 10 Wood Procurement Guidelines

1. Source wood products from areas with relatively low risk of illegal logging.
2. Source wood products from areas without sensitive ecosystems.
3. Do not source wood products from areas where local ecosystems are seriously damaged due to large-scale logging of natural forests.
4. Do not use endangered species for wood products.
5. Minimize CO<sub>2</sub> emissions when producing, processing, and transporting wood products.
6. When logging wood products, avoid conflict with local communities and refrain from unfair labor practices.
7. Source wood products from areas of controlled logging, so as not to exceed the rate of forest regeneration.
8. Source wood products from domestic forests where well-planned forest management is in place to conserve ecosystems.
9. Source wood products from plantation forests that are managed so as to promote conservation and ecosystem development.
10. Use recyclable wood building materials.

#### Wood Product Procurement Ranking

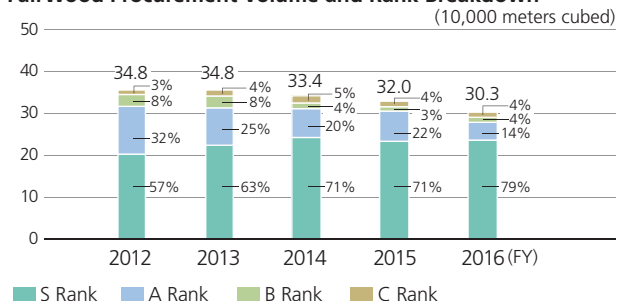
Depending on their total score, procured wood products are classified into four ranks, from high to low: S, A, B, and C. Minimally acceptable scores are set for Guidelines 1 and 4, as we place a high priority on these two items.

Total score (maximum 43 points)	Rank
34 and above	S
26 to 33	A
17 to 25	B
Below 17	C

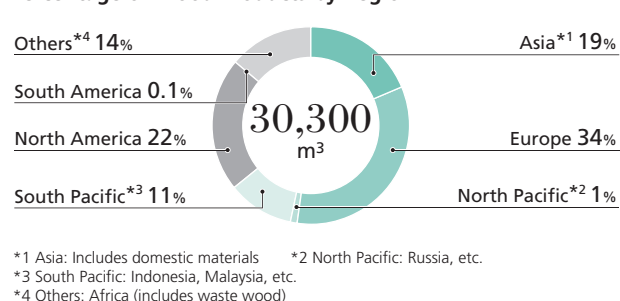
### Key Performance Indicators (KPIs)

Indicator	Unit	FY2012	FY2013	FY2014	FY2015	FY2016	Target	Definition and remarks
Ratio of Rank S and Rank A wood products as defined by the Wood Procurement Guidelines	%	89	88	91	93	93	95	Survey results of about 50 of our main wood suppliers

#### FairWood Procurement Volume and Rank Breakdown



#### Percentage of Wood Products by Region



### Evaluation

In FY2016, the combined proportion of Rank S and Rank A wood, a management target, was the same as last year at 93%, but the ratio of Rank S wood rose by 8 points to 79%.

### Future Initiatives

Supplier awareness regarding procurement is growing in line with the enforcement of the Clean Wood Act in May 2017, so we will use this opportunity to strengthen consulting for each of our suppliers.





# Maintain and improve technological development, manufacturing and construction quality

Realize maximum customer satisfaction through superior quality and leading technologies

## Main stakeholders:

Customers, employees, partner companies (procurement, processing, distribution, and construction), factories, and residents living in neighborhoods surrounding construction sites

## Backdrop

### Construction Workers Now Fewer and Older—a Nationwide Problem Amid Demands for High-Quality Housing

The frequent occurrence of large-scale natural disasters such as earthquakes and typhoons across Japan in recent years has heightened the importance of housing's role as the cornerstone of life. Yet recently in the construction industry, one scandal after another has come to light in the construction industry, such as the falsification of construction and product performance data. This caused anxiety to increase among consumers, whose confidence in construction quality has been substantially shaken. The social responsibility of people working in the construction industry to "protect the lives and assets of residents" has been called into question.

At the same time, one in three workers in the Japanese construction industry are aged 55 or older. As these older workers retire, the decline in the number of construction workers is expected to continue. Similarly, the shortage of workers in the transportation industry responsible for the distribution of materials is becoming increasingly serious. In light of these trends, it is critically important to recruit and train new employees and improve the workforce retention rate, while also improving labor productivity and working environments through reforming workstyles and other methods.

## Approach

### Our Goal

### Creating the Highest Possible Quality for Maximum Customer Satisfaction by Leveraging Our Technological, Production and Construction Capabilities

Our goal as defined in the Sekisui House Group corporate philosophy is to meet customer needs with the highest levels of quality and technology. In collaboration with partner companies with whom we share a common destiny, we perpetually retain skilled employees and build structures

that stably provide quality housing able to be lived in and passed on to future generations providing safety, peace of mind and comfort. We aim for the highest quality in all house manufacturing processes and provide products and services that earn customer trust and satisfaction.

### Action Policies

#### 1 Realizing Heightened Safety, Peace of Mind and Comfort through Advanced Technologies

Sekisui House is pursuing higher levels of quality and performance in terms of basic safety and comfort, leveraging advanced technological and organizational capabilities accumulated for more than half a century. We lead the industry and will establish our product as the standard for Japanese housing.

#### 2 Enhancing Production and Distribution Quality, Improving Operational Efficiency

Sekisui House promotes production line maintenance and automation for the stable provision of high-precision parts to make production more efficient and facilitate build-to-order production of various product types in small lots. We collaborate with distributors in an effort to make distribution more efficient.

#### 3 Strengthening Construction Site Capabilities through Collaborations with the Sekisui House Association

In conjunction with the Sekisui House Association (a voluntary organization comprising Sekisui House Group companies involved with construction and our partner building contractors), we make an effort to strengthen construction site capabilities by improving construction quality, communicating with customers and people living near the site and initiatives involving safety measures, clean construction sites, human resource development and work environment improvements.

## Impact of These Activities on the Company

We continuously develop new technologies from the perspective of whether or not they are useful to customers or contribute to society. Initiatives including the maintenance of equipment and systems and the retention and development of skilled human resources enable us to fulfill our mission to “protect the

lives and assets of residents,” and most importantly, to enhance the quality of production and construction. This enables us to realize customer satisfaction and amass high-value housing as stock for society. This will lead to enhanced corporate and brand value.

## Risk Management

### Risk 1 Shortage of workers in the construction and transportation industries

**Our response 1** We will promote production line maintenance and automation, engage in prefabrication (precutting, presetting, and partial assembly of components at the factory) and create systems that maximize labor force utilization through proper process planning and personnel allocation without excess or waste with the aim of conserving manpower and realizing efficiency and labor- reduction in production, distribution and construction at worksites. We are also making an effort to retain talented employees through training for young technicians operated by Sekisui House Training Schools, support for the development of multiple skill sets that can be deployed flexibly, maintenance of the work environment, enhanced welfare programs and a system for commending achievements.

### Risk 2 Quality risks associated with production and construction processes

**Our response 2** We ensure quality in all housing manufacturing processes through observation of related laws and the establishment of our own rigorous standards. We also promote production quality risk management in conjunction with partner companies. In addition, we operate a Group-wide construction quality control system aimed at ongoing improvement activities, internal controls, the maintenance and storage of records and careful construction quality management of each and every home we build. This includes the “visualization” of quality information and other verification records using photos and the use of iPads running specialized applications for site foremen and construction managers (Sekiwa Construction, home construction companies). These initiatives aim to enhance timely construction site management and increase quality levels.

## State of Progress

### 1 Realizing Heightened Safety, Peace of Mind and Comfort through Advanced Technologies

#### Activities Report

#### Reducing Building Deformation by Approximately 50% with SHEQAS Seismic Control System, Certified by the Ministry of Land, Infrastructure, Transport, and Tourism

The stronger the earthquake, the higher the risk that the building deformation will be severe, damaging the structural frame, interior and exterior. Sekisui House's proprietary SHEQAS seismic control system converts seismic wave energy into heat energy to absorb building movement, and can reduce building

deformation by approximately 50%. The SHEQAS damper, made of special high-damping rubber, maintains its efficacy through large earthquakes and repeated aftershocks, providing housing in which residents can continue to live with peace of mind.

#### Airkis High-Quality Indoor Air System, Which Reduces Indoor Concentrations of Five Major Chemical Substances to Less Than 50% of the Guideline Value Set by the Government

From early on we have focused our attention and promoted research on the health impact of chemical substances in our construction materials. We developed the Airkis high-quality indoor air system using standards that take into account the fact that children are more susceptible to the impact of air pollution than adults. Using Airkis in the home reduces indoor

concentrations of five major chemical substances to less than 50% of the guideline value set by the government. In addition to reducing chemical substances, we are also engaged in ventilation and air purification to improve the overall quality of air environments. To this end, we developed proprietary ventilation and air conditioner systems.

#### Developing and Implementing New First Floor Subfloor Construction Method, Which Offers Improved Safety and Reduces Workload

We developed an innovative new construction method for the first floor of buildings, and have been using this method as the standard for collective housing Sha Maison since October 2016. The previous method involved placing floor panels on top of steel frames called lumber girders, but under the new method, the floor panels and lumber girders are integrated. This reduces the labor involved and substantially shortens construction time. In addition, construction has become safer, as there is no longer a need to step over the lumber girders when working.

Old construction method



Using integrated lumber girders and floor panels

New first floor underfloor construction method



## Key Performance Indicators (KPIs)

Indicator	Unit	FY2012	FY2013	FY2014	FY2015	FY2016
SHEQAS seismic control system installation ratio (steel-framed two-story detached housing)	%	75	87	89	94	96
Airkis high-quality indoor air system installation ratio (steel-framed detached housing)	%	76	78	80	85	87

## Evaluation

Many customers opted to install our original seismic control system, SHEQAS, which protects during earthquakes and enables freedom in planning, as well as the high-quality indoor air system, Airkis. In FY2016, 96% of steel frame detached houses had installed SHEQAS, and 87% had installed Airkis, each up 2 percentage points from the previous year.

## Future Initiatives

In FY2016, the installation rate for SHEQAS and Airkis reached 100% for some business offices, while for others it stopped at 60%. In the end, installation is up to the customer, but we will continue to actively propose these options to offer safer and more comfortable homes.

# 2 Enhancing Production and Distribution Quality, Improving Operational Efficiency

## Activities Report

### Promoted Automated Production of Main Structural Components

As Sekisui House builds detached houses based on specifications tailored to each customer, the components we use also differ from one house to another. At our factories, we promote maintenance and automation of our production lines to provide precision components offering stable performance and quality while attempting to engage in the efficient and labor-saving custom manufacturing of various product types in small lots. In FY2016, we worked to increase automation and production capacity of production lines at our Shizuoka and Yamaguchi plants, to respond to an increase in orders for “βSystem” construction

of steel rigid-frame three- and four-story homes. For our two-story steel housing, we also worked to increase capacity and promote automation, substantially reforming production lines at our Kanto plant in line with the increase in orders of the original exterior-wall component Dyne Concrete.



Automated production line at Shizuoka factory

### Increasing Efficiency of Delivery to Construction Sites, and Improving Working Environment for Drivers

To respond to societal challenges such as the insufficient number of truck drivers and to the growth in our remodeling and renovation business, we are streamlining distribution by partnering with construction sites and distributors. In FY2016, we created a new system to deliver temporary construction materials such as horizontal safety nets and safety rails to

construction sites from our factories when needed, and to quickly retrieve them afterward. In addition, we strived to reduce working hours and driver workload by streamlining shipping preparation at factories, such as reviewing flow, reducing the loading time and wait time for drivers.

### Continuously Working to Improve Quality, Aiming for the Superior Quality and Leading Technology

We are continuing activities to improve quality toward our corporate mission of offering superior quality and leading technology. From 2014, we established the main points of a mechanism for handling grievances and abnormalities under ISO9001, and have been working to reduce the number of cases from all construction sites using a unified process. In addition, from 2015, as part of a strategy to reduce the number of

construction site grievances and abnormalities to zero, we have been strengthening mutual audits between factories and field-specific working group activities.

As a result of these activities, in FY2016 the number of grievances and abnormalities from construction sites decreased by about 60% compared to FY2012. We plan to continue promoting quality improvement throughout the entire production process.

## Key Performance Indicators (KPIs)

Indicator	Unit	FY2012	FY2013	FY2014	FY2015	FY2016	Definition and remarks
Breakeven point shipment area	%	100.0	100.9	102.4	98.5	93.1	Index utilizes FY2012 as 100
Trends in grievances and abnormalities at construction sites	%	100.0	98.0	75.6	56.7	60.9	Index utilizes FY2012 as 100



## Evaluation

We were able to respond to the growing demand such as for three- and four-story housing and original exterior-wall component Dyne Concrete by maintaining and increasing production line capacity and streamlining distribution. We were also able to steadily streamline operations and improve quality for production and construction.

## Future Initiatives

In addition to further improving quality, we will strengthen measures in the supplied housing business such as remodeling and the development business. To contribute to streamlining efficiency at construction sites and reducing labor, we will continue initiatives such as reforming the way materials are delivered to construction sites and continue to pre-process and assemble components at factories.

# 3 Strengthening Construction Site Capabilities through Collaborations with the Sekisui House Association

## Activities Report

### Reforming Each System through Discussions with Sekisui House Association

We visit Sekisui House Association chapters nationwide and conduct interviews. Through discussions with our directors we hear various requests and suggestions, and implement reform starting from the top priority issues. In 2016, we newly established a six-month applied skills course as part of the Sekisui House Training Schools, accredited vocational ability development

schools operated by Sekisui House, to further increase the skillset of young technicians. Regarding the special bonus given to technicians who pass the Sekisui House Senior Technician Exam, we raised the maximum age of recipients from 65 to 70. This has increased motivation for skilled technicians who have spent many years working to improving quality.

### Create A Structure to Gather Requests and Suggestions from Construction Sites and Implement Reform

To increase construction efficiency and improve quality, the Sekisui House Group is creating a construction reform request database as a measure to listen to the voices from construction sites. Registered requests are examined at Construction Reform Department Meetings held every other month, and responded to sequentially.

To lead to broader and faster reforms, from 2015 we widened the scope of registrants who can request improvement, adding head architects from all branches and construction managers from each Sekiwa Construction company. At these meetings, we

added participants from each Sekiwa Construction company and partner construction companies, and have a system to gather opinions and suggestions from on the ground in real time. We are promoting activities to improve construction as a Group-wide endeavor.

We are working to share information with employees at construction sites and build partnerships, so concrete reforms that result from these activities are included in *Tsuchioto*, a newsletter distributed to the Sekisui House Group and partner construction companies, and on our company intranet.

## Key Performance Indicators (KPIs)

Indicator	Unit	FY2012	FY2013	FY2014	FY2015	FY2016
Construction workers (foundations, construction, carpentering)	People	—	—	10,518	10,393	9,843
Educational training center and school participants (total)	People	2,208	2,294	2,385	2,480	2,568
Employees who passed the Sekisui House Senior Technician exam (total)	People	14,301	14,458	14,607	14,808	15,012
Certified Construction Masters	People	205	312	318	305	325

## Evaluation

In FY2016, a total of 88 employees attended Sekisui House Training Schools: 31 employees participated in the building frame exterior course and 57 employees participated in the interior construction course. The retention rate for employees still with the company five years after participating in the training is extremely high at 90%. Young energy invigorates worksites and contributes to enhanced construction capabilities.

## Future Initiatives

To strengthen the reception of our training schools, we created interior labs at three centers, and built new dormitories and remodeled others. We are also building a women-only area for female participants. We will work to increase skills by offering applied skills courses in both interiors and exteriors in FY2017, compared to FY2016, when we offered only a course in interiors. Going forward, we will further boost our remodeling internship program and practical training of interior and exterior remodeling of three- and four-story buildings, continuing to improve the construction capabilities of participants.