

## 2014-2016 ENVIRONMENTAL PROGRAM

*In 2014, Grifols established its 2014–2016 Environmental Program, which identified the environmental objectives and targets for each division and facility during this period.*

---

The primary advances in putting the Environmental Program into practice in 2015 have centered on implementation of systems to reduce electricity and natural gas consumption in existing facilities and those under construction, to reduce water consumption, and to improve waste recovery.

In 2015, a new objective was added to the Environmental Program as a result of identifying new water-saving opportunities.

- Implementation of a program to reduce water consumption by 45,488 m<sup>3</sup> annually by improving processes and recycling clean water in the Bioscience Division's facilities in Los Angeles, California. The specific actions are described in the water consumption section of this report.

Conversely, it was considered appropriate to discard the following objectives included in the Environmental Program in 2014:

- Reduce natural gas consumption by 1.8 million kWh/year in San Francisco by installing high-efficiency heat recovery heat pumps. The project has been reconsidered as construction progresses on the new production facility in San Francisco, given the limited applications for the recovered heat.
- In the Hospital Division in Parets del Vallès, Barcelona: Reduce use of sodium hydroxide for cleaning production lines and treating process water by 54 metric tons. Reduce use of hydrochloric acid for water treatment by 48 metric tons. This objective requires major changes in the production water treatment lines, which will be addressed in future years. Nevertheless, in 2015 consumption of sodium hydroxide was reduced by 21%, and consumption of hydrochloric acid by 6%, as a result of improvements in the process water demineralizer regeneration phase.
- The Diagnostic Division's Zero Landfill project in San Francisco, California has been postponed until the needs of the new production plant, which is currently under construction, can be properly studied.

# GRIFOLS AND THE ENVIRONMENT

## 2014-2016 ENVIRONMENTAL PROGRAM



### ENERGY · ELECTRICITY

Facilities already in operation  
**1.4-million-kWh/year reduction**



- Reduce consumption by 990,000 kWh/year by improving roof insulation and internal air recirculation.
- Decrease consumption by 239,000 kWh/year by increasing the energy efficiency of the climate control system.
- Save 95,000 kWh/year by improving energy efficiency in the compressed air network.
- Reduce consumption by 63,000 kWh/year through improvements in lighting and climate control systems in the Madrid and Vicopisano offices.
- Reduce consumption by 7,000 kWh/year by installing a virtual server.
- Replace two evaporative condensers, install automated CIP reactor-cleaning systems, improve pipe insulation, install variable-frequency drives and new, more efficient lighting.



### ENERGY · ELECTRICITY

Facilities under construction  
**2.7-million-kWh/year reduction**



- Save 1.3 million kWh/year by means of energy-efficient lyophilizers, high-efficiency motors, and energy-efficient lighting in the new Prolastin®-C production plant.
- Apply LEED standards in constructing the raw materials storage facility and office building, reducing energy consumption by 907,000 kWh.
- Reduce consumption by 360,000 kWh/year by installing variable-frequency drives in motors, converting cold water systems to closed circuits and installing LED lighting and motion sensors.
- Save 170,000 kWh/year by installing a high-efficiency cooling system in the new offices.



### ENERGY · NATURAL GAS

Facilities already in operation  
**7.3-million-kWh/year reduction**



- Reduce consumption by 3.8 million kWh/year by using reverse osmosis water instead of water for injection (WFI) when cleaning production areas.
- Save 2.95 million kWh/year by improving the steam condensate system: flash steam recovery and increased condensate recovery.
- Reduce consumption by 590,000 kWh/year by eliminating the pasteurization phase in manufacturing blood collection bags.

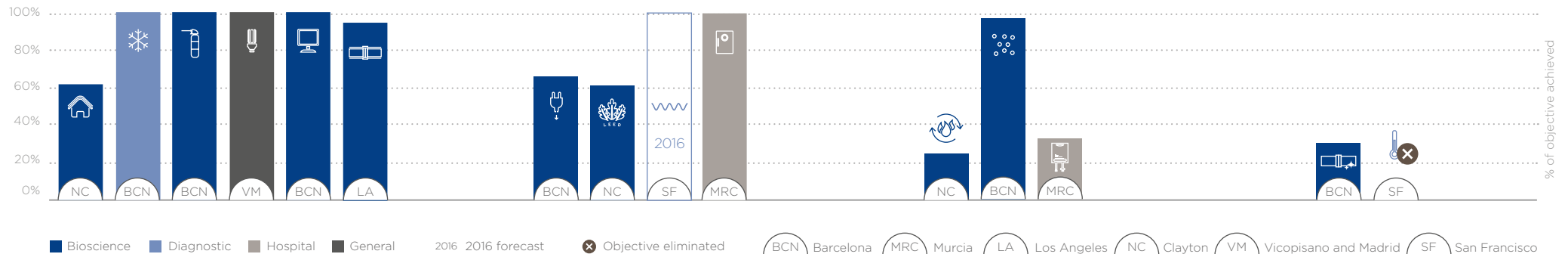


### ENERGY · NATURAL GAS

Facilities under construction  
**2.9-million-kWh/year reduction**



- Save 1.1 million kWh/year at the new Prolastin®-C plant by installing 8 CIP cleaning systems and high-efficiency cooling equipment and by insulating pipes.
- Reduce consumption by 1.8 million kWh/year by installing high-efficiency heat recovery heat pumps.



# GRIFOLS AND THE ENVIRONMENT

## 2014-2016 ENVIRONMENTAL PROGRAM

### WATER

Reduce by 225,488 m<sup>3</sup>



- Recover 120,000 m<sup>3</sup>/year of clean water for cooling towers.
- Perform a study to recover 280,000 m<sup>3</sup> of rainwater in refrigeration systems.
- Reduce consumption of reverse osmosis wastewater by 50,000 m<sup>3</sup>/year.
- Reduce the consumption of water for injection by 13,000 m<sup>3</sup> at the Bioscience Clayton (NC) production facility.
- Apply water-saving measures to reduce consumption by 30% in the new raw materials storage facility at Bioscience Clayton (NC) and in the new Diagnostics production facility in San Francisco (SF).
- Implement a program to reduce water consumption by 45,488 m<sup>3</sup> annually by improving processes and recycling clean water.

### WASTEWATER

Improve wastewater quality



- Improve pH neutralization in the wastewater plant.
- Increase the capacity of the wastewater plant to treat an additional 2,500 kg of COD per week.

### WASTE

Increase recovery by 9,077 metric tons in comparison with 2013



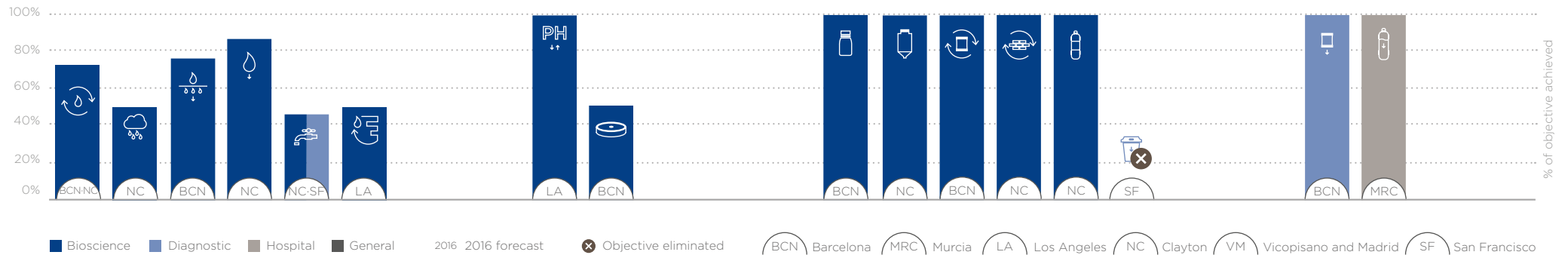
- Recover 1,000 metric tons/year of high-COD liquid waste and 3,360 metric tons/year of polyethylene glycol and sorbitol liquid waste.
- Recover 1,700 metric tons of production waste by means of anaerobic digestion.
- Increase polyethylene plastic recycling by 17 metric tons/year.
- Recover 3,000 metric tons of construction and demolition waste for energy use, and recycle more than 50% of this waste type during the construction of the new raw materials storage facility and office building.
- Improve the quality of the plastic recycled from plasma bottles.
- Decrease the volume of waste deposited in landfill sites (Project Zero Landfill).

### WASTE

Reduce waste by 9.3 metric tons



- Reduce plastic waste by 1.3 metric tons.
- Minimize the production of waste liquids in the preparation of concentrated solutions by 8 metric tons/year.



# GRIFOLS AND THE ENVIRONMENT

## 2014-2016 ENVIRONMENTAL PROGRAM



### RAW MATERIALS

Reduce consumption of raw materials by 102 metric tons.



- Reduce the use of sodium hydroxide for cleaning production lines and treating process water by 54 metric tons. Reduce the use of hydrochloric acid for water treatment by 48 metric tons.
- Decrease waste of plasma intended for fractionation by 10%.



### MATERIALS

Maximize the use of sustainable resources



- Use recycled parts, local materials and FSC wood in the new raw materials storage facility.
- Replace 0.3 metric tons of PVC plastic with chlorine-free plastic during equipment manufacturing.



### EMISSIONS

Reduce atmospheric pollutants emissions



- Reduce emissions of CO<sub>2</sub> equivalent by 31 metric tons by reducing plasma collection routes by 30,000 km/year in Spain.
- Use low-VOC construction materials.
- Reduce NO<sub>x</sub> and particulate emissions by means of a new low-emission emergency generator.
- Replace 25 metric tons of R-22 refrigerants with refrigerants that don't deplete the ozone layer.



### ENVIRONMENTAL QUALITY

Standardize environmental management



- Standardize and certify the Environmental Management System under ISO 14001.
- Implement the Environmental Management System under ISO 14001.
- Implement the Corporate Environmental Manual in all production plants.

