



Ministry of Sustainability  
and the Environment  
— SINGAPORE —



## MEDIA RELEASE

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### **NEW RECYCLING REQUIREMENTS TO BOOST WATER EFFICIENCY AMONG WATER-INTENSIVE INDUSTRIES**

*Water fabrication, electronics and biomedical industries to meet minimum recycling requirements from January 2024*

**Singapore, 2 March 2023** – To advance water resilience and environmental sustainability in the non-domestic sector<sup>1</sup>, National Water Agency PUB will be mandating water recycling on new projects in the water-intensive wafer fabrication, electronics, and biomedical industries from 1 January 2024. Recycling water on-site for reuse, will help companies reap cost-savings from lower water bills which contributes to their long-term competitiveness and resource resilience.

2 A minimum recycling rate (RR) will be required for wafer fabrication plants involved in front-end semiconductor manufacturing. As for the electronics and biomedical plants, the recycling of specified waste water streams will be made compulsory.

#### **Water Recycling to Contribute to Sustainability and Water Resilience**

3 Singapore consumes about 440 million gallons water per day (mgd), and total water demand is expected to almost double by 2065. A major source of demand growth is expected to come from the non-domestic sector which demand is projected to increase from 55% of total consumption today to more than 60%. To conserve our water resources, we must therefore raise water efficiency in the non-domestic sector, especially among large water users.

4 The wafer fabrication, electronics and biomedical industries are among the largest water users in Singapore, accounting for 17% of the current non-domestic water demand. There is also high potential for water recycling in these industries, as their used water streams can be effectively recycled when segregated at source. In addition, some waste water streams from the electronics and biomedical plants are fairly clean, making it easier to recycle with minimal treatment required. With the new recycling requirements in place, Singapore is projected to achieve water savings equivalent to 15 Olympic-sized swimming pools daily from 2035 onwards (or 9 million gallons of water per day).

#### **New Water Recycling Requirements**

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<sup>1</sup> The non-domestic sector encompasses all water users other than households, including industries, commercial offices and retail premises.

5 The following requirements will apply to **new projects** (including expansion of existing plants) that will consume at least 60,000m<sup>3</sup> of water annually from 1 January 2024:

- a) Minimum 50% RR for wafer fabrication plants involved in front-end semiconductor manufacturing; and
- b) Recycling of specified waste streams for electronics plants and biomedical plants.

6 The requirements will apply to new projects that submit planning applications from January 2024. Ongoing projects and those that have already submitted or will be submitting planning applications before 1 January 2024 will not be affected by these requirements. Refer to the **Annex** for the definition of industries and projects that will be subjected to the proposed Mandatory Requirements.

### **Support for Companies**

7 PUB has consulted companies from the affected industries on the requirements. There was industry support for more efficient use of water, and agreement among the companies that the recycling requirements are achievable for new projects. Currently, the median RR among existing wafer fabrication plants is already at 43%.

8 More companies and industries are embracing sustainable practices in their operations. Adopting water conservation practices such as water recycling is aligned with their sustainability goals to increase long-term competitiveness and resource resilience. It makes economic sense by helping them save on water bills. Managing water demand in the non-domestic sector will also allow for more optimal water infrastructure planning and strengthen Singapore's overall water resilience. PUB will support companies with technical advice on design plans for new facilities and operations. We are considering the provision of incentives for companies who want to achieve recycling rates higher than the mandated level," said Mr Ridzuan Ismail, Director of PUB's Water Supply Network Department.

9 PUB will continue to engage companies early so that they can plan for the recycling requirements from an early stage. Companies implementing water recycling projects to meet the new mandatory recycling requirements can apply for financial support from PUB's Water Efficiency Fund (WEF) and Industrial Water Solutions Demonstration Fund (IWSDF) within the next two years till end 2025. PUB is also reviewing its funding framework and looking into providing more incentives for companies to achieve higher RR beyond the mandated 50% level. Details will be made available in the next few months.

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## **About PUB, Singapore's National Water Agency**

PUB is a statutory board under the Ministry of Sustainability and the Environment (MSE). It is the national water agency, which manages Singapore's water supply, water catchment, and used water in an integrated way. From April 2020, PUB also took on the responsibility of protecting Singapore's coastline from sea-level rise as the national coastal protection agency.

PUB has ensured a diversified and sustainable supply of water for Singapore with the *Four National Taps* (local catchment water, imported water, NEWater, desalinated water). PUB leads and coordinates whole-of-government efforts to protect Singapore from the threat of rising seas and the holistic management of inland and coastal flood risks.

PUB calls on everyone to play a part in conserving water, in keeping our waterways clean, and in caring for Singapore's precious water resources. If we all do our little bit, there will be enough water for all our needs – for commerce and industry, for living, for life.

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**Definition of Industries and Projects subject to the Mandatory Recycling Requirements****Industries****(i) Wafer Fabrication**

- Companies whose core activity is front-end semiconductor manufacturing, i.e. fabrication from a blank wafer to a completed wafer that has not been separated into individual chips.

**(ii) Electronics**

- Companies involved in testing and assembly of semiconductor chips or manufacturing of products closely related to semiconductor devices such as logic, mixed signal, mask blanks, photomask, etc.
- Companies involved in the manufacturing of products that are closely related to electrical components such as hard disk, sensor, capacitor, etc.

(Note: For companies that have a mix of front-end and back-end manufacturing semiconductor processes, only the front-end portion will be required to recycle at a minimum 50% RR, while the back-end portion will be required to recycle the waste streams that are fairly clean.)

**(iii) Biomedical**

- Companies involved in the manufacturing of biomedical, pharmaceutical and healthcare related products including but not limited to Active Pharmaceutical Ingredients, Biologicals, Medical Equipment and dermatological products.

**Projects****(iv) New projects**

- New plants/buildings that will be separately designed, built, and served by a new water treatment system.