

White Paper on Water Supply Access in Shanghai

2023



Shanghai Water Authority

Preface

Optimizing the business environment is a key mandate issued by the CPC Central Committee and the State Council, a crucial step in deepening reforms to “streamline administration and delegate power, improve regulation, and upgrade services” and thus stimulate market vitality and enhance intrinsic driving force for development. In Shanghai’s pursuit of a world-class business environment, the provision of smart, resilient, and stable water supply services, coupled with rigorous and comprehensive water supply supervision, is a cornerstone. These elements play a vital role in propelling economic and social development.

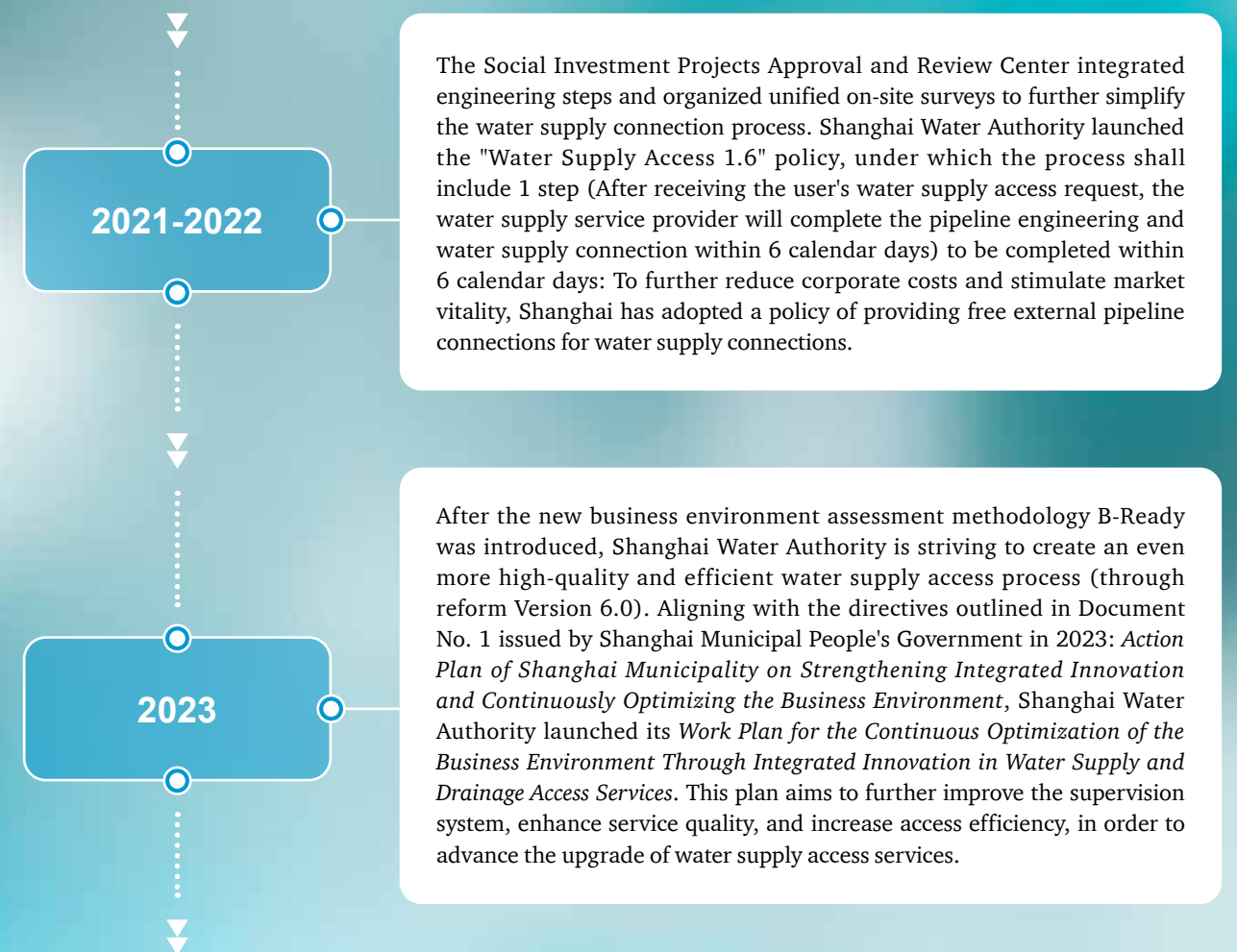
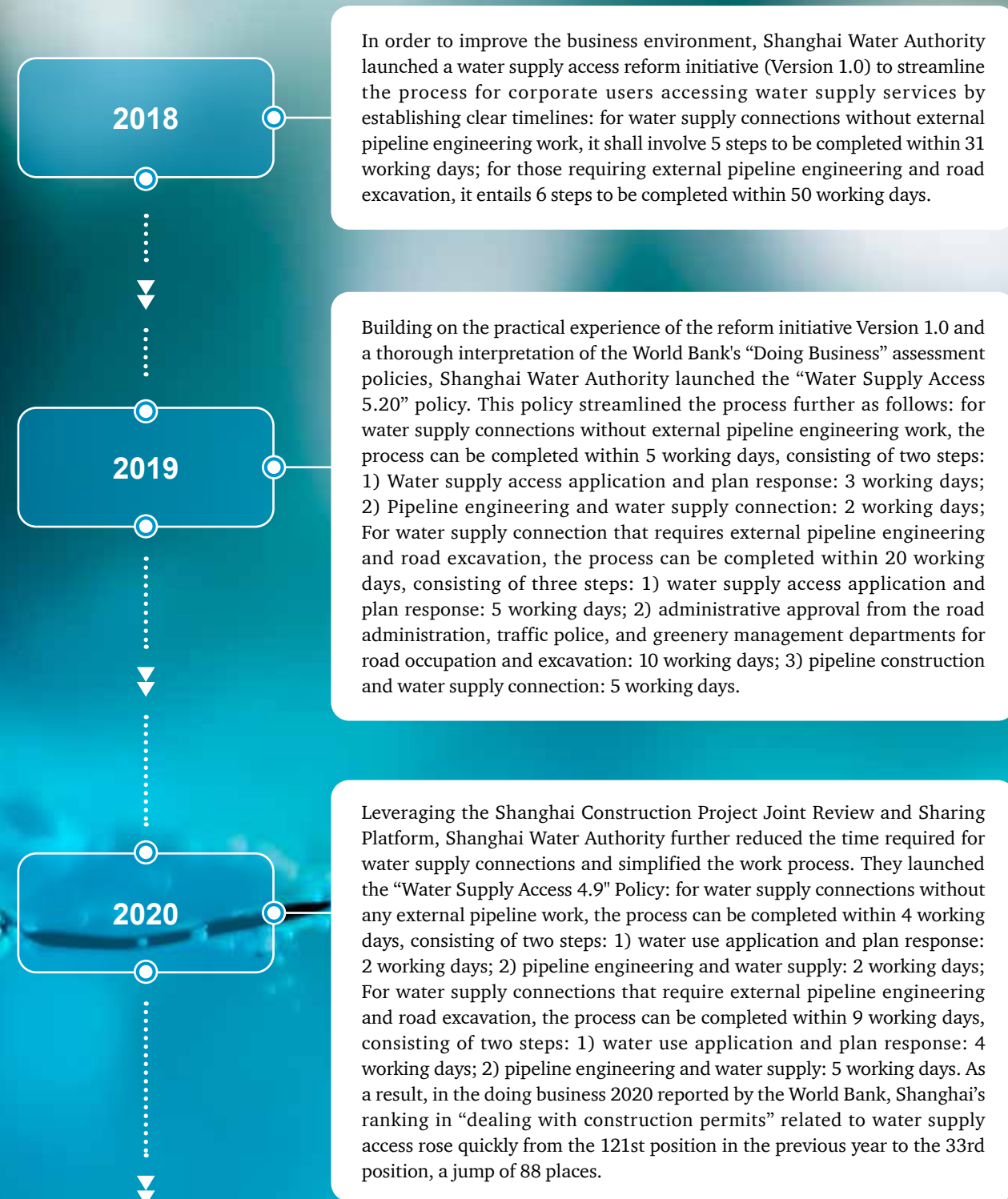
Shanghai, positioned at the Yangtze River’s estuary and downstream of the Taihu Lake basin, is a city that has flourished due to its proximity to water. Since the 1990s, through around three decades of strategic planning and development, Shanghai has established four key water sources: the Chenhang, Qingcaosha, Dongfeng Xisha along the Yangtze River, and the Jinze Reservoir upstream of the Huangpu River. This has led to the establishment of a coordinated water management system that leverages “dual river sources, centralized water intake, reservoir-based water supply, and centralized network dispatching.”

In 2002, Shanghai’s 209 water plants relied primarily on inland rivers or deep wells, with most being small facilities equipped with only basic treatment processes. These were insufficient to meet the city’s demands for high-quality development and stringent safety standards. In response, the Shanghai Water Authority established strategic objectives for “integrated urban-rural development, networked distribution, and intensive water supply management” to guide district governments in consolidating water supply efforts. By the end of 2017, more than 100 small town-level water plants in the suburbs had been decommissioned, leading to the formation of an integrated urban-rural water supply system. This system features coordinated sourcing of raw water, consolidation of water treatment plants, centralized network dispatch, scaled operations, and uniform services. Water intakes have been streamlined to four major sources: Qingcaosha, Chenhang, Jinze, and Dongfeng Xisha in Chongming District. Today, Shanghai’s 40 water plants boast a combined water supply capacity of 12,485,000 cubic meters per day, ranking it as the city with the largest water supply scale and the largest user base in China.

Since 2018, Shanghai Water Authority has been systematically implementing reforms to streamline water supply access in response to new circumstances and demands. It has directed water supply companies to elevate their service levels by mainly improving convenience, efficiency, and transparency. This has led to a significant reduction in the water supply connection process, from “31 workdays for 5 stages” to “6 natural days for a single stage,” achieving a seamless experience with zero burden for users. Efforts have been made to optimize the process across three key dimensions: time, steps, and cost. These reform initiatives have benefited a wide range of users, including enterprises and residents. The World Bank’s evaluation team has highly praised and recognized these efforts.

It is time to ride the wave and forge ahead. Following the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, Shanghai Water Authority is dedicated to providing world-class business environment and first-rate water supply services. As provided by laws and regulations, Shanghai Water Authority actively explores optimal new water supply models, and strengthens digital empowerment to ensure reliable supply, demonstrating a soaring spirit and firm determination to create a new international benchmark for water supply services and form the “Shanghai Experience” in this domain!

Milestones in Optimizing Water Supply Access Services



Major Events in 2023

2023

- January**
 - At a city-wide conference on optimizing its business environment, Shanghai Municipal Government launched the *Action Plan to Strengthen Integrated Innovation and Optimize the Business Environment in Shanghai*. This move reflects Shanghai's thorough understanding of President Xi Jinping's instructions on optimizing the business environment. To implement the Action Plan, the city is taking marketization as a clear guiding principle, the rule of law as the fundamental guarantee, and internationalization as an important criterion. Shanghai is making solid efforts to implement various tasks to optimize its business environment, guide social expectations, boost development confidence, accelerate high-quality development, and provide strong support for realizing stable and healthy development of the economy and society.
- February**
 - Shanghai Water Authority released the *Rules of Shanghai Municipality on the Quality Management of Water Supply (2023)* to align with the *Hygiene Standards for Drinking Water* and unify the water quality testing requirements for water supply service companies and monitoring government agencies across the city. This move will help strengthen the management of water supply quality and safeguard the safety of the water supply in Shanghai.
- March**
 - Shanghai Water Authority convened a meeting on optimizing the business environment by advancing its reform initiative to streamline the water supply access process and reduce the time and costs for companies that require water connections. This reform initiative will help improve the efficiency of water supply access services and optimize the local business environment.
- April**
 - Shanghai Water Authority issued the *Action Plan of Shanghai Municipality to Optimize the Business Environment Through Bringing Innovations to Water Supply and Drainage Access Services*. The plan aims to further improve the regulatory system, enhance service quality, and increase access efficiency, in order to advance the upgrade of water supply access services. These measures provide strong support for fostering an international, law-based and convenient business environment in Shanghai.
- May**
 - Shanghai Water Authority reported to the Department of International Economic and Financial Cooperation of the Ministry of Finance on the progress of water supply access service optimization, highlighting the contributions of Shanghai's water supply industry to optimizing the overall business environment. It also communicated with the relevant State ministries.

2023

- June**
 - Shanghai Water Authority attended a meeting convened by the Ministry of Housing and Urban-Rural Development to share progresses in optimizing water supply access services to help improve the business environment. Presenting its achievements the meeting, Shanghai demonstrated its leading and exemplary role in the national water supply industry.
- July**
 - Shanghai Water Authority held an executive meeting to make arrangements related to optimizing the business environment. These arrangements demonstrate its determination to improve the business environment.
- August**
 - Shanghai Water Authority conducted a satisfaction survey on water supply access services as part of its water supply access reform initiative Version 6.0. This survey reflected the water supply industry's ongoing efforts to improve service quality and enhance user satisfaction in Shanghai.
- September**
 - Shanghai Water Authority released the *Control Plan of Shanghai Municipality on Water Supply Reliability (Trial)*. This plan aims to strengthen the reliability and operational stability of Shanghai's water supply system. The release of this plan demonstrates the water supply industry's commitment to ensuring the city's water security and resilience.
- October**
 - Shanghai Water Authority carefully studied the gender-disaggregated customer survey conducted by the World Bank while evaluating business environments. This demonstrates Shanghai's efforts to not only optimizing the overall business environment, but also specifically promoting gender equality as part of those improvement efforts.
- November**
 - All business outlets of Shanghai's water supply companies started providing customers with the one-stop option for paying their water, electricity, and gas bills through the e-government platform Government Online-Offline Shanghai. This has enhanced the efficiency and overall quality of these public utility services for users.
- December**
 - Shanghai Water Authority issued the *Measures of Shanghai Municipality for Disclosing Information on Public Water Supply Quality*. This policy initiative aims to improve the transparency around key water quality indicators. It also provides users with clearer and more convenient access to information on water quality and other critical water supply metrics.

Our Service

Shanghai is the city with the largest water supply volume in China. As of the end of 2023, Shanghai's water supply infrastructure was as follows:

The raw water projects from the four major water sources had a combined supply capacity of **13,345,000** cubic meters per day. Additionally, the backup water intake has a supply capacity of **5** million cubic meters per day;

There were **40** water plants with a total supply capacity of **12,485,000** million cubic meters per day and an annual total water supply volume of **2.955** billion cubic meters;

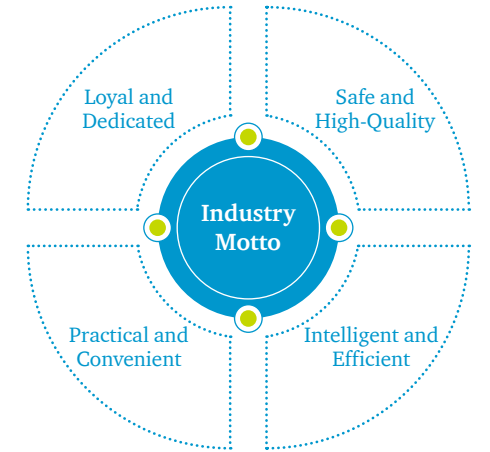
The length of the water supply pipe network with a diameter of DN75 or greater exceeds **40,000** kilometers; Over **9.9** million water meters had been installed;

There were **23** water supply companies. Among them, Shanghai Chengtuo Water Group Co., Ltd. is the company with the largest comprehensive water treatment capacity in Shanghai.

Our Mission

Standing at a new historical starting point, adapting to the new development landscape, and responding to new challenges, our focus will rest on improving user satisfaction and bolstering Shanghai's status as a megacity and enhancing its core competitiveness. To achieve this, we will strictly adhere to the following "Four Principles": 1) people-oriented principle: addressing the people's needs and wellbeing; 2) problem-oriented principle: highlighting and addressing key issues; 3) coordination principle: pursuing overall planning and joint progress; and 4) innovation principle: exerting two-pronged efforts for reform and innovation.

Upholding the fundamental principles of "safety, green, low-carbon, and intelligence", we will work to build a water supply assurance system that is economical, intensive, high-quality, and efficient for this socialist modern international metropolis. In doing so, we aim to contribute our water supply efforts towards making Shanghai an innovative, culturally vibrant, and ecologically sound city which people aspire to.



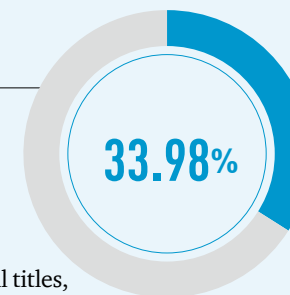
Our Team

The water supply access service in Shanghai is supervised by the Shanghai Water Authority and water authorities at the district level, while the actual service provision is handled by water supply companies.

- ▶ As of the end of December 2023, Shanghai's water supply administrative oversight units had 331 staff members, including 159 in municipal units and 172 in district-level units.
- ▶ As of the end of December 2023, Shanghai's water supply companies had a total of 8,420 employees.

Technicians

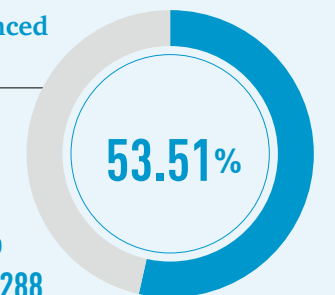
Among the employees of Shanghai water supply companies, there are **2,861** technicians with professional titles, accounting for **33.98%** of the total employees. Of these technicians, **233** hold senior professional titles.



Skilled Workers

(Intermediate or advanced qualifications)

Among the employees of Shanghai water supply companies, there are **4,276** skilled workers, of which **2,288** have intermediate or advanced qualifications, accounting for **53.51%** of the total skilled workers.



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Chapter 1 Improving the Regulatory Framework and Setting a Benchmark for Compliant and Efficient Water Supply

Shanghai Water Authority and water authorities at the district level have been firmly committed to the rule of law, strictly following and enforcing laws and regulations governing the water supply sector. In response to new situations and requirements, they have systematically advanced water supply access reforms. In this process, they have continued to challenge themselves, striving to be pioneers and drivers in implementing the sustainability strategies of the water supply sector.

I. Strengthening Supervision Over Water Supply Access Services

1. Strictly enforcing laws and regulations

01 Implementing legal and regulatory requirements concerning water supply access services

Shanghai Water Authority and water authorities at the district level resolutely enforce all laws and regulations governing water supply access services. They effectively carry out supervision across the city, with the aims of optimizing the service quality and ensuring the security of water supply.



- ▶ **Laws:** *The Water Law of People's Republic of China, the Water Pollution Prevention and Control Law of People's Republic of China* and other laws and regulations provide the fundamental framework for the management, protection, and utilization of water resources. These legal provisions serve as the guiding principles for the standardized and sustainable development of the water supply industry.
- ▶ **Departmental administrative regulations:** *Regulations such as the Regulations on Urban Water Supply, Measures on Price Administration of Urban Water Supply, Regulations on Administration of Urban Water Supply Quality, and Implementation Measures on Water-related Administrative Licensing* are key institutional frameworks that guide and govern the compliance requirements and development of the water supply industry.
- ▶ **Local regulations:** Local regulations such as the *Regulations of Shanghai Municipality on the Administration of Water Supply* and the *Regulations of Shanghai Municipality on Drainage and Sewage Treatment* provide detailed operational guidelines and requirements for the service delivery and sustainable development of the water supply industry, as under the provision of national laws and administrative regulations.
- ▶ **Normative documents:** *The Control Plan of Shanghai Municipality on Water Supply Reliability (Trial), Rules of Shanghai Municipality on the Quality Management of Water Supply, Management Rules of Shanghai Municipality on Water Supply and Dispatch, Measures of Shanghai Municipality for Disclosing Information on Public Water Supply Quality, and Implementation Rules of Shanghai Municipality on Progressive Charges for Non-Residential Water Use Exceeding Quota* are important supplements to the laws and regulations governing water supply access services.
- ▶ **Industry standards:** National and industry standards such as the *Sanitary Standard for Drinking Water* and the *Standard for Water Quality of Urban Water Supply* are essential for ensuring the standardized management and service delivery of the water supply industry.

02 Implementing an open and transparent pricing system for water supply

Shanghai Water Authority and water authorities at the district level are the governmental agencies responsible for overseeing the water supply sector in the city. They are the joint decision-makers of Shanghai's water supply pricing system and strictly implement the requirements for open and transparent pricing.

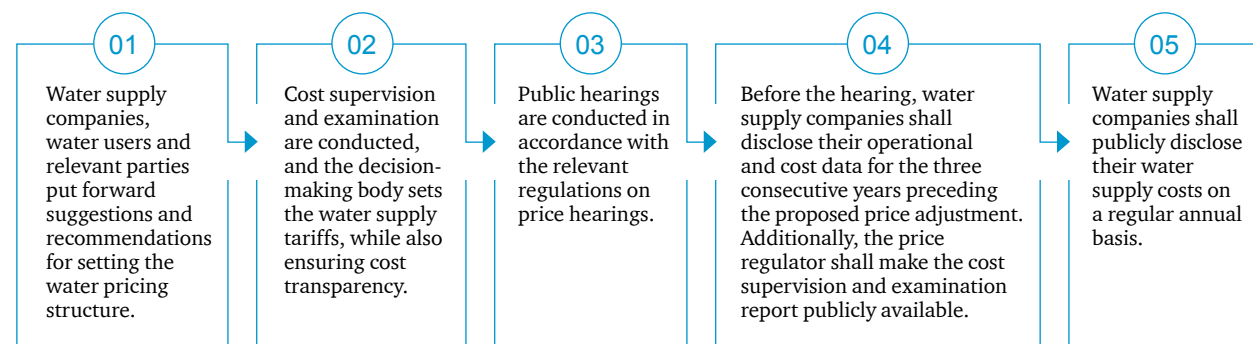
Pricing of water supply in Shanghai

Pricing mechanism: Water supply prices are determined based on a thorough cost supervision and audit process, taking into account the relevant regulatory requirements for water supply costs. Crucially, the prices are set by the “allowable cost plus reasonable profit” method. Furthermore, the pricing is subject to a 3-year supervision cycle.

Water supply price categories and pricing methods

Category	Pricing method
Residential prices	Three-tiered pricing, with the price differential between the tiers set at a ratio of no less than 1:1.5:3
Non-residential prices Specific industry prices	<p>Progressive charges for use within and exceeding quota</p> <p>Water use is divided into four tiers:</p> <ul style="list-style-type: none"> ▶ The first tier applies to water use within the quota. For this tier, the prices are determined in accordance with the price standard for non-residential users, as announced by the price authorities. ▶ The second tier applies to water use that exceeds the quota by 20%. For this tier, in addition to the regular rate, a surcharge will be levied at 0.5 times the base rate. ▶ The third tier applies to water use that exceeds the allotted quota by more than 20% up to 50%. For this tier, in addition to the regular rate, a surcharge will be levied at 1 times the base rate. ▶ The fourth level applies to water use exceeding the quota by more than 50%. For this tier, in addition to the regular rate, a surcharge will be levied at 2 times the base rate. <p>(In order to lower the cost of non-residential water use, the progressive surcharges for water use exceeding the quota were halved in 2023.)</p>

Water tariff determination procedures and information disclosure



Regulations of Shanghai Municipality on the Administration of Urban Water Supply Pricing



Implementation Rules of Shanghai Municipality on Progressive Charges for Non-Residential Water Use Exceeding Quota

03 Advancing the implementation of the water supply reliability control plan

Based on the *Specifications for Reliability Evaluation of Customers of the Urban Water Supply System* issued by the China Urban Water Association, the Shanghai Water Authority, after consulting with the Municipal Development and Reform Commission, the Municipal State-owned Assets Supervision and Administration Commission, the Municipal Human Resources and Social Security Bureau, as well as water supply companies, has issued the *Control Plan of Shanghai Municipality on Water Supply Reliability (Trial)*. This Plan serves as the main basis for rewarding or penalizing water supply companies in the city.



Control Plan of Shanghai Municipality on Water Supply Reliability (Trial)

Highlight 1: The Plan clearly defines the methods for statistical analysis of outage events in the public water supply system, the calculation method for the reliability of water supply users, and the reward and punishment standards for water supply reliability. This forms a quantifiable and operable evaluation system for the reliability of the water supply service.

Highlight 2: The Plan provides a work guide to urge water supply companies to reduce the average annual water outage duration and average annual water outage frequency experienced by users.

2. Ensuring high-quality water supply access

01 Orderly planning of infrastructure development

Water supply companies have thoroughly implemented the requirements for the planning and construction of comprehensive utility tunnels in Shanghai. They actively coordinate with power, gas, internet, and other infrastructure providers to reasonably plan and schedule road excavation needs. The goal is to ensure all types of underground pipelines are laid in place at the same time, avoiding the occurrence of disruptive “road zipper” construction that involves repeated road openings.

01



Notice of the General Office of Shanghai Municipal People's Government on Promulgation of Opinions on Promoting the Development of Comprehensive Utility Tunnels in Shanghai Municipality

02



Opinions on Incorporating Shanghai's Underground Utility Pipelines into the Comprehensive Utility Tunnels

Water supply companies, in accordance with the specifications for concurrent application and installation of water, electricity, gas pipeline and network, assist users in applying for and obtaining parallel municipal access approvals. After receiving users' applications for water supply access, water supply companies shall use the Shanghai Construction Projects Review and Approval System to coordinate with the city and district-level review and approval centers. This enables a one-stop service model involving "one application form, one window for acceptance and consultation, and joint site survey".

Currently, except for major municipal pipeline access projects involving trunk and secondary roads in the central urban area of Shanghai, other municipal pipeline access projects have been included in the scope of comprehensive road excavation.

Classification Table for Road Excavation Construction Projects

Project Category	Scope	Length	Pipeline Specifications
Municipal pipeline connection projects involved in joint application for installation of water, electricity, and gas pipelines and networks	Central urban area	Water, gas, and communication involving trunk and secondary roads: Connection projects within 50 meters without crossing the road; Water, gas, and communication involving branch roads: Connection projects within 200 meters.	Gas: Diameter less than or equal to DN300; Water supply: Diameter less than or equal to DN300;
	Outside the outer ring road	Electricity projects involving trunk and secondary roads: Direct burial without crossing the road; Electricity projects involving branch roads: Projects implemented by direct burial or conduit methods. No length limit; all involved	
General municipal pipeline connection projects	Central urban area	Water, gas, and communication: Connection projects within 50 meters without crossing the road. Electricity: Low-voltage non-residential connection projects, 10KV electrical connection projects on sidewalks without the need for conduit construction (direct burial projects).	Sewer: Diameter less than or equal to DN600; Electricity: Low-voltage non-residential and 10KV.
	Outside the outer ring road	Water, gas, and communication: Connection projects within 100 meters. Electricity: Connection projects of 10kV and below.	

Notes: 1. "Without crossing the road" in this table refers to transverse excavation not crossing to the opposite lane.
2. The "area outside the outer ring road" in this table does not include expressways and national or provincial highways (except for non-excavation crossings).



Service Guide of Shanghai Municipality on Joint Application for Installation of Water, Electricity, Gas Pipelines and Networks



Joint Application for Comprehensive Road Excavation

3. High requirements for water supply access services

Shanghai Water Authority and its affiliated agencies have collaboratively established an efficient regulatory framework, ensuring complete oversight and regulation of water supply access services.

Shanghai Water Authority:

▶ Overseeing the operation of the water supply industry:

- Organizing the professional planning of water supply and supervising its implementation
- Monitoring water pressure, water volume, and water quality, and overseeing emergency dispatch for tap water supply
- Supervising the construction, operation, and maintenance of water supply facilities

▶ Overseeing water conservation:

- Drafting policies for water conservation, coordinating the development of water conservation strategies and overseeing their execution, and leading the establishment of relevant standards
- Implementing management systems, including total water consumption control, and providing guidance and impetus for the development of a water-efficient society

Shanghai Water Supply Management Center (Shanghai Water Conservation Promotion Center)

- ▶ Overseeing daily tasks of water intake, water supply, water conservation, planned (quota-based) water use, operation of water supply facilities, and leading initiatives in water resource management and the development of a water-efficient society (city)
- ▶ Supervising work safety within the water supply sector, taking charge of counter-terrorism efforts, and organizing emergency response measures for incidents occurring within the industry

Shanghai Water Supply Dispatching and Monitoring Center

- ▶ Monitoring water pressure, volume and quality in Shanghai, monitoring temporary water outages or water pressure reductions by water supply companies, conducting water supply quality testing and control, and handling disputes and conflicts related to water supply access services
- ▶ Performing administrative tasks associated with Shanghai's water supply dispatching and management, developing the city's water supply dispatching plan, organizing and executing cross-regional emergency water supply operations, and providing assistance in emergency response efforts within Shanghai's water supply sector

Law Enforcement Team of Shanghai Water Authority

- ▶ Supervising and inspecting the water supply in Shanghai, and legally enforcing administrative penalties for any violations
- ▶ Conducting routine patrols and inspection, and organizing targeted rectification campaigns as part of Shanghai's water law enforcement activities

Shanghai Water Construction Engineering Safety and Quality Supervision Center

- ▶ Supervising the safety and quality of Shanghai's water supply facility construction projects
- ▶ Conducting administrative law enforcement for the safety and quality of water supply facility construction projects

The Shanghai Municipality Control Plan on Water Supply Reliability (Trial) establishes a reward and penalty mechanism based on the annual water supply reliability rates of Shanghai's water supply companies.

Name	Targets	Rewarding/Penalizing adjustments
Water Supply Reliability Index (WSRI)	WSRI ≥ 95	▶ Increasing total wage bill limit by 1 million yuan
	95 > WSRI ≥ 85	▶ Increasing total wage bill limit by 500,000 yuan
	85 > WSRI ≥ 70	▶ None
	70 > WSRI ≥ 60	▶ Reducing total wage bill limit by 500,000 yuan
	WSRI < 60	▶ Reducing total wage bill limit by 1 million yuan

Regulations of Shanghai Municipality on the Administration of Water Supply explicitly delineate the legal responsibilities for breaches of water supply facility construction standards and the degradation of water supply service quality.

Violations of water supply facility construction standards:

✘ Violations

- ▶ Infringement upon the water supply development strategy and its annual construction schedule, or unauthorized construction of water supply facilities
- ▶ Engaging in the design or construction of water supply projects without the requisite licensing or in excess of the operational scope delineated by the qualification certificate
- ▶ Design or construction of water supply projects not carried out in compliance with the national technical standards and specifications

✔ Legal liabilities

- ▶ Shanghai Water Authority or the district-level water authorities shall mandate the cessation of the unlawful conduct and levy a penalty ranging from 5,000 yuan to 50,000 yuan
- ▶ In the event that damages are incurred, the liable party is obligated to compensate for such damages in accordance with the law
- ▶ Supervisors who bear direct responsibility, along with other personnel directly at fault, shall be subject to administrative penalties as determined by their respective organizations or superior agencies



Breaches concerning the quality standards of water supply services:

✘ Violations

- ▶ The water quality for supply purposes or the tap water intended for artificial groundwater recharge fails to comply with the national regulatory standards
- ▶ The pipeline pressure fails to comply with the prescribed regulatory standards
- ▶ The responsible entity fails to conduct the required inspections, cleaning, and disinfection of the water supply facilities as stipulated by regulations or fails to initiate emergency repair operations within the designated time period following any malfunction of the water supply infrastructure
- ▶ Failure to perform the obligation to notify the temporary suspension of water supply or reduction of water pressure in accordance with regulations
- ▶ Stopping water supply without authorization or failing to take emergency water supply measures in accordance with regulations
- ▶ Failing to load meters or read meters in accordance with regulations

✔ Legal liabilities

- ▶ Correction within a time limit, and a fine of 5,000-50,000 yuan shall be imposed
- ▶ Correction within a time limit, and a fine of 2,000-20,000 yuan shall be imposed
- ▶ Correction within a time limit, and a fine of 1,000-10,000 yuan shall be imposed
- ▶ Correction within a time limit, and a fine of 3,000-30,000 yuan shall be imposed
- ▶ Correction within a time limit, and a fine of 3,000-30,000 yuan shall be imposed
- ▶ Correction within a time limit, and a fine of 500-5,000 yuan could be imposed

II. Strictly Abiding by Laws and Regulations to Ensure Water Supply Quality

1. Ensuring the possession of professional qualifications

The Construction Law of the People's Republic of China, Regulations on Urban Water Supply, Regulations on Construction Enterprise Qualification Management, and Regulations on the Quality Management of Construction Projects, among other legal statutes, stipulate the qualifications required for construction entities and their technical personnel.

No.	Laws, regulations, and industry standards	Provisions
1	<i>Construction Law of the People's Republic of China</i>	Specialized technical personnel engaging in construction activities shall attain the relevant certificates of professional qualification and conduct building activities within the scope of their certificates of professional qualifications.
2	<i>Regulations on Urban Water Supply</i>	Urban tap water supply companies and enterprises that supply water to the public through their own infrastructure are required to enforce a certification system for their employees to be qualified for their respective positions.
3	<i>Regulations on Construction Enterprise Qualification Management</i>	All companies shall apply for construction industry qualifications based on their assets, key staff, past project performance and technical equipment. Upon successful review and acquisition of the construction industry qualification certificate, they are authorized to engage in construction activities within the limits permitted by their qualification.
4	<i>Law of the People's Republic of China on Work Safety</i>	Special operation workers of a business entity must receive special training on safe operation as required by the state, and may take their posts only after obtaining a corresponding qualification. The scope of special operation workers shall be determined by the Emergency Management Department of the State Council in conjunction with the other relevant departments of the State Council.
5	<i>Regulations on the Supervision and Management of Quality for Housing Construction and Municipal Infrastructure Projects</i>	Supervisors shall meet the following criteria: <ul style="list-style-type: none"> ▶ Having a college degree or above in an engineering discipline or a registered engineering professional qualification; ▶ Having more than three years of work experience in project quality management or in roles such as design, construction, and supervision; ▶ Being well-versed in relevant laws and regulations and mandatory standards for engineering construction projects; ▶ Demonstrating organizational and coordination skills, along with a high standard of professional ethics. <p>Only after fulfilling these conditions and passing the requisite assessment may supervising personnel undertake the role of quality supervision in construction projects.</p>
6	<i>Standards for Occupational Skills in Urban and Rural Water Supply Industries</i>	Standards for Occupational Skills of Water Supply Plumbers.



2. Implementing systematic inspection protocol

01 Qualification requirements for water supply installation companies

The Construction Law of the People's Republic of China, Regulations on the Quality Management of Construction Projects, Regulations on the Safety Management of Construction Projects, and Regulations of Shanghai Municipality on the Quality and Safety of Construction Projects, among other legal and regulatory frameworks, stipulate supervisory and inspection requirements for companies and personnel involved in the installation of internal and external water supply systems.

No.	Laws and regulations	Provisions
1	<i>Construction Law of the People's Republic of China</i>	Contractors for construction projects must hold a legally obtained qualification certificate.
2	<i>Regulations on the Quality Management of Construction Projects</i>	The developer, as the contracting authority, should award contract to the construction project to entities that possess the requisite qualification grade.
3	<i>Regulations on the Safety Management of Construction Projects</i>	Construction enterprises engaged in activities including new construction, expansion, renovation and demolition must fulfill the prerequisites set by the state regarding registered capital, technical staff, technical equipment, and work safety in production. They must have legally acquired qualification certificates and undertake projects within the scope permitted by their qualification levels.
4	<i>Regulations of Shanghai Municipality on the Quality and Safety of Construction Projects</i>	Construction workers are required to seek a Labor Information Card from the municipal construction administrative authorities. Construction companies or subcontractors must promptly enter the identity, employer, job qualifications, work experience, training records, social security and other information of the construction workers into the Card.

The *Construction Law of the People's Republic of China* and the *Regulations on the Quality Management of Construction Projects* mandate that entities involved in the installation of both internal and external water supply systems must undergo inspections and obtain certifications to ensure the quality of their installations:

- ▶ The developer, as well as the surveying, design, construction and supervision entities shall be responsible for the quality of the construction project.
- ▶ The construction enterprise must establish and maintain a robust system for the inspection of construction quality. They must strictly manage the construction processes and ensure comprehensive quality inspections and documentation for concealed works.
- ▶ The construction enterprise must assume responsibility for rectifying works that encounter quality issues during the construction phase or do not meet the standards upon completion during the final acceptance inspection.

Conditions for final acceptance of construction projects:

- ▶ The completion of all design aspects of the construction project and all items stipulated in the contract;
- ▶ Possession of complete technical records and construction management documentation;
- ▶ Availability of on-site test reports for the main building materials, construction components, and equipment used in the project;
- ▶ Quality certification documents signed by respective entities involved, including surveying, design, construction, and supervision entities; and
- ▶ A project warranty issued and signed by the construction enterprise.

Only after a completed project is proved to meet the standards through examination can it be delivered for use.



The *Regulations on the Quality Management of Construction Projects* mandate that the final quality examination of water supply installations be conducted by a third-party entity to ensure the installation quality of both internal and external water supply facilities. Shanghai Municipal Water Construction Safety and Quality Supervision Center, acting in accordance with the law, oversees the safety and quality of water supply construction projects in Shanghai. It also carries out administrative law enforcement duties related to the safety and quality of Shanghai's water supply projects and participates in the phased and final acceptance inspections of the water supply projects under its supervision.

- ▶ After receiving the completion report of the construction project, the developer shall coordinate with the design, construction, supervision and other relevant entities to conduct final acceptance inspection.
- ▶ Agencies tasked with the quality supervision of housing construction and municipal infrastructure projects are required to undergo an evaluation by the construction administrative department of the State Council or by the corresponding department of the people's governments of provinces, autonomous regions, or municipalities directly under the central government, as per the relevant national regulations. They are only authorized to conduct quality supervision upon successful completion of the evaluation.
- ▶ Institutions that specialize in the quality supervision of construction projects are mandated to undergo an accreditation process conducted by the relevant departments of the State Council or by the corresponding departments within the people's governments of provinces, autonomous regions, and municipalities directly under the central government, in compliance with the pertinent national regulations. They are authorized to execute quality supervision duties solely upon successful completion of the accreditation process.

3. Strengthening accountability

According to the *Construction Law of the People's Republic of China* and the *Regulations on the Quality Management of Construction Projects*, professionals or companies performing installation work must be held fully accountable.

No.	Laws and regulations	Provisions
1	<i>Construction Law of the People's Republic of China</i>	<p>Surveying and design institutions shall be responsible for the survey and design quality of construction projects.</p> <p>A project supervising enterprise colludes with a developer or construction enterprise to practice fraud and lower the quality of the project shall ordered to correct the situation and imposed fine penalties, and shall have their qualification level reduced or their qualification certificate revoked. Any illegal gains shall be confiscated. Where losses are incurred, the supervising entity shall assume associated liabilities for compensation. If the act constitutes a crime, criminal responsibility will be pursued according to the law.</p>
2	<i>Regulations on the Quality Management of Construction Projects</i>	<p>Registered professionals, including architects and structural engineers, are required to affix their signatures to design documents, thereby assuming responsibility for the accuracy and compliance of the design documentation.</p> <p>The construction enterprise shall establish a quality accountability system, clearly defining the roles and responsibilities of the project manager, technical lead, and person in charge of construction management.</p> <p>In instances where a construction project is managed through a general contracting framework, the general contractor is accountable for the overall quality of the construction work.</p>

III. Advancing Towards the Philosophy of Providing Sustainable Water Supply Services

1. Ensuring the rational use of water resources

01 Implementing regular water quality monitoring

Shanghai Water Authority conducts monthly monitoring of 29 indicators on the four water sources and 43 routine parameters for tap water quality at Shanghai's water treatment facilities. Additionally, comprehensive annual monitoring is performed for all 97 indicators. The Authority also implements monthly checks on 7 critical indicators for Shanghai's pipeline water supply and conducts special oversight of secondary water supply systems.

The water authorities of the suburban districts perform quarterly monitoring of 43 routine parameters for the effluent water quality at the water treatment plants within their respective jurisdictions. Additionally, they conduct a comprehensive assessment of all 97 parameters at least once annually. Furthermore, they implement quarterly monitoring of 7 key indicators for the water within the distribution network.

By solidifying the government's supervisory responsibilities, the safety of water quality throughout the entire supply chain, from "source to tap", is effectively safeguarded across the city. The municipal water quality fully complies with the assessment criteria of the national *Hygienic Standards for Drinking Water* and the *Shanghai Drinking Water Quality Standards*.

02 Enforcing water supply standards

Water supply access service standards:

The standards for water supply access services are defined by the *Customer Service for Public of City Water Supply and Specifications of Shanghai Municipality on Tap Water Industry (Trial)*.

Water quality standards:

The water quality requirements and standards are established in accordance with the *Sanitary Standard for Drinking Water and Standards of Drinking Water Quality*.

Water use efficiency standards:

The *Shanghai Water Use Quota (Trial)* and associated guidelines explicitly stipulate the industry-specific water usage quotas for enterprises, thereby encouraging and facilitating water conservation efforts.

03 Implementing targeted initiatives for water conservation

Shanghai Water Authority, along with district-level water authorities in Shanghai, is fully committed to implementing the national water conservation initiative. This commitment is driving continuous improvements in the intensive and efficient use of water resources, which in turn supports the high-quality economic and social development of the city and enhances the quality of life for its residents. Shanghai was honored as one of the first batch of "water-saving cities" in China in 2002. With the endorsement of the State Council, it has consistently earned top ratings for its rigorous water resource management system. The city has achieved significant success in various areas, including water quota management, the development of water-saving infrastructure, industrial water conservation and emission reduction, and the promotion of contract-based and smart water management practices. These accomplishments have collectively shaped the "Shanghai Experience", offering a valuable reference for water conservation efforts across the nation.



In 2023, Shanghai achieved significant milestones in water conservation:
Total water consumption: **7.327** billion cubic meters, well below the quota of **11.2** billion cubic meters.

Water use per 10,000 yuan of GDP: **16** cubic meters, down **15.8%** from 2020.

Water consumption per 10,000 yuan of industrial added value: **32** cubic meters, down **5.9%** from 2020.

These achievements not only meet but also surpass the annual control targets, underscoring the city's commitment to and success in water management and conservation.

Water-saving management policies

- ▶ *The Action Plan of Shanghai Municipality on Water Conservation* outlines specific water-saving tasks and objectives for water-using entities.
- ▶ *The Evaluation Indicators and Assessment Methods of Shanghai Municipality for Water-Saving Enterprises* and the *Evaluation Indicators and Assessment Methods of Shanghai Municipality for Water-Saving Parks (Industrial Parks and Service Industry Parks)* stipulate the requirement for water-using entities to install water-saving fixtures and devices.
- ▶ *The Notice on Strengthening Water Conservation Management for Shanghai's Major Water Users* establishes water conservation requirements for large water-consuming entities.

Water conservation incentives

- ▶ Shanghai has launched a green finance initiative known as the "Water Conservation Loan", offering accessible and preferential financial support to water-consuming enterprises and organizations, as well as to water conservation projects and services. This policy effectively alleviates the financial pressures on businesses and encourages greater investment of both financial and social capital into the field of water conservation.
- ▶ Every year, Shanghai recognizes and commends enterprises that excel in water conservation by designating them as water-saving enterprises. Additionally, individuals in these enterprises who make particularly notable contributions to water conservation are given the accolade of "outstanding individuals".



2. Promoting smart water meters

As of December 2023, there are **254,700** smart meters installed in non-residential areas in the city, with a coverage rate of **67.39%**.

Specifically, for large-diameter water meters (DN≥40), the number of installed smart meters reached **93,000**, with an impressive coverage rate of **97.37%**.

Chapter 2 Upholding Openness and Transparency to Deliver Smart and Convenient Water Supply Services

Shanghai Municipal Water Bureau, along with district-level water authorities, remains steadfast in its dedication to fostering a water supply system that is transparent, stable, sustainable, and of high quality. By implementing a suite of policies and significant measures, they have ceaselessly refined and elevated the efficiency and caliber of water supply management and services. These efforts ensure the enduring utilization and conservation of water resources, thereby fortifying the underpinnings of Shanghai's sustainable growth and the pursuit of an elevated quality of life. In doing so, they have exemplified the role and obligations of progressive stewardship within the modern water supply sector.



I. Voluntarily Disclosing Information On Water Supply Service Quality

1. Upholding transparency in public information disclosure

01 Disclosing information on water supply reliability

Shanghai Water Authority is committed to enhancing the reliability of its water supply services, aiming to foster a first-class business environment globally. In 2023, the reliability rate of water supply in Shanghai exceeded 95%, with reward and penalty measures fully implemented.

Public Announcement of Shanghai Water Authority on the Industry Feedback on the Water Supply Reliability of Shanghai Chengtou Water Group Co., Ltd.



02 Disclosing information on water quality

To enhance water quality management and ensure the public disclosure of water quality information, Shanghai Water Authority has formulated and issued the *Measures of Shanghai Municipality for Disclosing Information on Public Water Supply Quality* in compliance with pertinent regulations and considering the specific circumstances of Shanghai. Shanghai Water Authority and all water supply companies shall rigorously adhere to the following stipulations.

Content and frequency of public information disclosure by Shanghai Water Authority

Shanghai Water Authority shall publicly release key statistical data regarding the water quality monitoring outcomes of the city's public water supply companies, encompassing the maximum, minimum, and average measurements, as well as the compliance rates. The disclosed parameters and their respective disclosure frequencies shall include:

- ▶ Monthly publication of 43 routine water quality indicators and their compliance rates for the tap water produced in the previous month;
- ▶ Monthly publication of 7 key water quality parameters and their compliance rates for the water in the distribution network from the previous month;
- ▶ Annual disclosure of the 54 extended water quality parameters and their compliance rates for the tap water produced throughout the current year, released at the end of each year.



Link to disclosures for the central urban areas

Content and frequency of public information disclosure by suburban water authorities

The water authorities of Shanghai's suburban districts are responsible for publicly disclosing the water quality monitoring outcomes of the water supply companies within their jurisdiction, which include the maximum, minimum, and average values, as well as the compliance rates. The parameters and their respective disclosure frequencies encompass:

- ▶ Disclosure of 43 routine water quality parameters and their compliance rates for the tap water produced in the previous quarter, released in the first month of each quarter;
- ▶ Disclosure of 7 key water quality parameters and their compliance rates for the water in the distribution network from the previous quarter, also released in the first month of each quarter;
- ▶ Annual announcement of the 54 extended water quality parameters and their compliance rates for the tap water produced throughout the current year, released at the end of the year.

Content and frequency of public information disclosure by water supply companies

Water supply companies are responsible for publicly disclosing the water quality test results for their operations, including disclose the maximum, minimum, average values, as well as the compliance rates. The parameters and their respective disclosure frequencies are as follows:

- ▶ 9 key water quality parameters and their compliance rates for the tap water produced daily, with an announcement made every day;
- ▶ 7 key water quality parameters and their compliance rates for the water in the distribution network from the previous two weeks, with an announcement made every two weeks;
- ▶ 43 routine water quality parameters and their compliance rates for the tap water produced in the previous month, with an announcement made once a month;
- ▶ 54 extended water quality parameters and their compliance rates for the tap water produced, with announcements made in June and December of each year.



Link to the public announcements of Shanghai Chengtou Water Group Co., Ltd.

Shanghai Water Authority conducts real-time monitoring of pipeline pressure through a network of over 1,000 online pressure monitoring stations across the city's water distribution system. The average service pressure of the water supply exceeds 160kPa, with a compliance rate of 97% or higher, thereby fulfilling the assessment criteria outlined in the *Management Rules of Shanghai Municipality on Water Supply and Dispatch*. This data is proactively made public on the Government Online-Offline Shanghai platform. Concurrently, each water supply company discloses the average service pressure within its network on its official website, ensuring the stability and orderliness of water supply services city-wide.

Enforcement of drainage and sewage treatment regulations

Shanghai Water Authority has made remarkable success in advancing sustainable development initiatives. Its law enforcement teams, authorized by the *Regulations of Shanghai Municipality on Drainage and Sewage Treatment*, enforces administrative penalties against violations and non-compliant acts. At the same time, district-level water authorities, aligning with their jurisdictional responsibilities and authority, oversee and manage drainage and sewage treatment operations within their respective administrative regions.

Technical specifications for sludge treatment and disposal

Shanghai Water Authority has formulated *Technical Specifications for Sludge Treatment and Disposal at Urban Water Plants*, which has been officially promulgated by the Shanghai Municipal Market Supervision Administration as a local standard. These specifications enhance the processes for sludge treatment and disposal at water treatment facilities, elevate the efficiency of these processes, and mitigate environmental pollution. They exemplify the Authority's innovative capacity and executive strength in advancing environmental management and the escalation of sustainable development initiatives.

Strengthening the management of wastewater reuse in water plants

Shanghai Water Authority has also achieved notable success in advocating for the recycling of wastewater generated by water plants. At present, 80% of the city's water plants have adopted wastewater recycling practices. The Authority has issued the *Notice on Further Strengthening the Management of Industrial Wastewater Reuse at Shanghai's water plants in Shanghai*, which mandates that water supply companies manage the recycling of production wastewater diligently, in strict accordance with the directives outlined in the notification.



Regulations of Shanghai Municipality on Drainage and Sewage Treatment



Technical Specifications for Sludge Treatment and Disposal at Urban Water Plants



Notice of Shanghai Water Supply Dispatching and Monitoring Center on Further Strengthening the Management of the Reuse of Wastewater Produced by the City's Waterworks

2. Ensuring the transparency of key indicators

To enhance the business environment and advance water access initiatives, Shanghai Water Authority has opened a dedicated "Business Environment" section on its official website. This portal facilitates straightforward access to essential metrics, including pipeline pressure, water quality, and tariff details.



The "Business Environment" section on Shanghai Water Authority's official website



The "Business Environment" section on Shanghai Chengtuo Water Group's official website



Water supply companies support online information access through multiple mobile channels such as their official website, the Government Online-Offline Shanghai platform, Suishenban app, and Alipay mini-program. Customers of Shanghai Chengtuo Water Group Co., Ltd. can also access various necessary information and manage all aspects of their water supply services through the Shanghai Water Supply app, its WeChat mini program and WeChat public account.

Picture 1: Shanghai Water Supply app of Shanghai Chengtuo Water Group Co., Ltd.

Picture 2: Suishenban APP on mobile terminals



3. Conducting inspections on the compliance of water supply connection

According to *Construction Law of the People's Republic of China*, *Urban Water Supply Ordinance*, *Regulations of Qualifications of Construction Enterprises*, etc., water supply connection projects must be executed by construction enterprises that possess the requisite qualifications. Throughout the construction process, quality assurance is ensured through inspections performed by specialized supervisory entities. Upon completion of the project, the water supply company orchestrates the acceptance process, which involves the participation of maintenance entities and the construction enterprise.



Project information for bidding construction enterprises released by Shanghai Chengtuo Water Group Co., Ltd.



China Tendering and Bidding Public Service Platform: Project information for bidding supervisory entities

II. Maintaining Transparency in Water Tariffs and Pricing Mechanisms

1. Public accessibility and clarity of water charges

The water supply tariffs in Shanghai are publicly disclosed on the official websites of Shanghai Water Authority, water authorities at the district level, and water supply companies, in addition to being detailed on physical and electronic water billing statements, so consumers are enabled to access water supply pricing information through both online and offline channels.

Water supply companies are committed to the rigorous enforcement of governmental pricing and service policies, ensuring timely transparency of water tariffs across both digital and traditional platforms. They operate under a regime of stringent regulatory oversight.

01 Transparency of water tariffs

Central Urban District Non-Residential Water Supply Tariffs (Shanghai Water [2021] No. 558)

Category	Rate (in yuan per cubic meter)	
Industrial Administrative Municipal (greening, sanitation)	3.32	
Special use	Golf	16.37
	Bath	11.62/16.37
	Car wash	6.87
	Beverage production	4.49

* In the event of any adjustments to water tariffs, timely public announcements will be made via the official websites, mobile applications, and mini-programs of the water supply companies. Additionally, a "Notice to Customers" will be distributed with ample notice, at least one billing cycle prior to the implementation of the new rates.



Water tariffs for users in the central urban areas

In 2023, to reduce water usage costs for non-residential users, the progressive surcharges for water consumption exceeding the allocated quota was halved:

1	Water use exceeding the quota by up to 20%	The surcharge was reduced from 0.5 times to 0.25 times the base rate.
2	Water use exceeding the quota by more than 20% up to 50%	The surcharge was reduced from 1 times to 0.5 times the base rate.
3	Water use exceeding the quota by more than 50%	The surcharge was reduced from 2 times to 1 times the base rate.

Non-resident users in the "two-high and one over-capacity" industries:

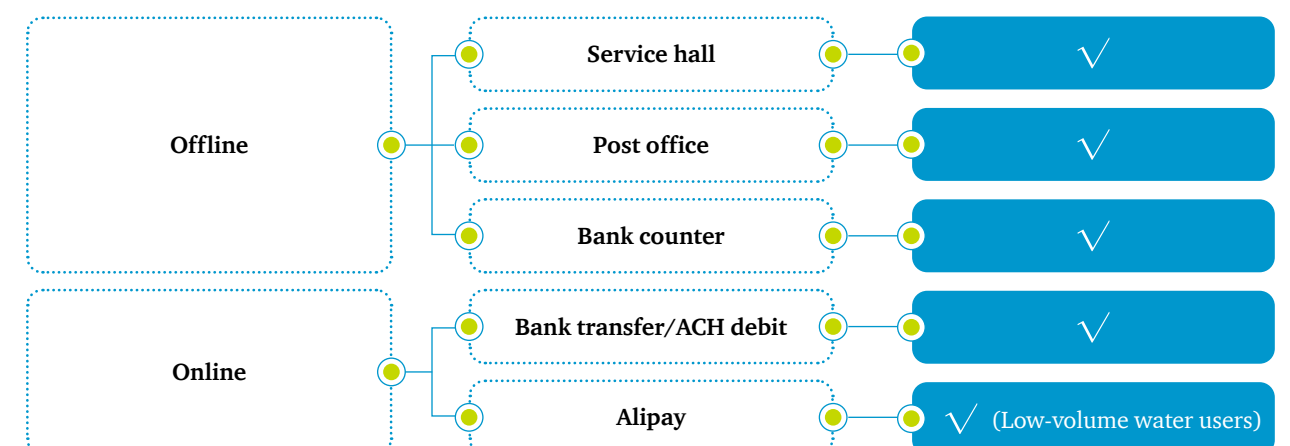
1	Water use exceeding the quota by up to 20%	The surcharge was reduced from 1 times to 0.5 times the base rate.
2	Water use exceeding the quota by more than 20% up to 50%	The surcharge was reduced from 2 times to 1 times the base rate.
3	Water use exceeding the quota by more than 50%	The surcharge was reduced from 3 times to 1.5 times the base rate.



02 Convenient water bill payment

To improve the convenience of payment for customers, water supply companies offer a variety of payment options.

Channels for water bill payments



2. Publicly announcing requirements for water supply connection

For new water supply connections, applicants can access the Government Online-Offline Shanghai platform or the Shanghai Construction Projects Review and Approval System, using their digital certificates. Under the Municipal Utilities Connection Services section, they can submit their request for new connections. The entire process including application submission and plan response, is paperless.

Shanghai Water Authority, aiming to facilitate the application process for water supply connections, has published the *Service Guide for Water Supply Connections*. The Guide delineates the documentation and procedural requirements necessary for connection. It details the service timelines for information intake, site survey verification, and the provision of connection responses, and explicitly states that the connection service is provided at no cost.

1	Information intake	Upon receipt of the user's request via the projects review and approval system, the project details and consultation requests are allocated to the appropriate service utilities.
2	Consultation service	The service utilities will examine and develop tailored consultation responses in accordance with the user's specified consultation requirements.
3	Confirmation and site assessment	Based on the project's location, intended use, scale, and additional pertinent information, as well as the proposed design plan, the service utilities will undertake necessary on-site assessments.
4	Response and connection	The service utilities will input their consultation feedback. For projects with prior consultation completion, the established opinions will be directly recorded as responses upon application receipt.



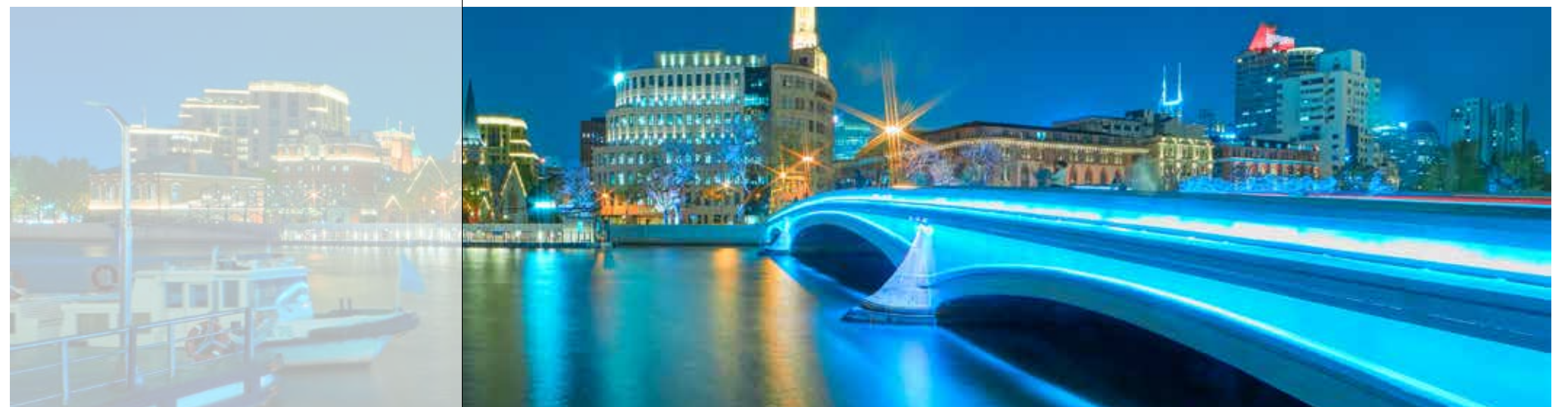
Service Guide of Water Supply Connections



Shanghai Construction Projects Review and Approval System

The entire process of water supply connection can be accessed online

操作流程		
供排水单位		
操作	部门或单位	日期
准入服务登记	上海城投水务(集团)有限公司自来水业务受理分公司	2024-01-18 17:00:00
准入服务通知	上海城投水务(集团)有限公司自来水业务受理分公司	2024-01-13 09:00:00
规划通知	上海城投水务(集团)有限公司自来水业务受理分公司	2023-12-13 15:00:00
规划通知	上海城投水务(集团)有限公司自来水业务受理分公司	2023-12-11 09:00:00
建设单位		
操作	部门或单位	
待规划	上海虹科物业管理有限公司	



3. Publicly disclosing water outage plans

01 Communicating planned water outages in advance

Prior to any scheduled water shutdown, water supply companies shall visit the residential areas and institutions that will be impacted by the planned outage. A *Notice of Water Interruption* shall be conspicuously displayed to communicate the specific cause, location, and timeframe of the water outage. Additionally, the cooperation of neighborhood committees and property management firms is sought to ensure proper preparations for the outage. In parallel, the official website of the water supply company will timely disseminate information regarding the planned outage, enabling users to access the details promptly.



Announcement of water outage plans

02 Taking emergency measures for unplanned water outages

In the event of a temporary suspension of water supply or a reduction in water pressure due to emergency maintenance of water facilities, water supply companies will concurrently undertake repairs and promptly attend to the impacted residential areas or institutions. They will post a Notice of Water Interruption or communicate with neighborhood committees or property management companies to issue an emergency water outage alert, either on-site or via telephone. Should the water supply remain interrupted for more than twenty-four hours consecutively, the affected water supply company will implement emergency measures, such as dispatching water trucks to the location, to safeguard the daily water needs of the users.

4. Implementing sound and convenient complaint mechanisms

Shanghai Water Authority, water authorities at the district level and water supply companies operate a robust framework for handling complaints, welcoming oversight from all sectors of society. Water users are invited to submit complaints concerning any water service-related concerns through various channels, including the 12345 Citizen Service Hotline, as well as dedicated hotlines, official WeChat accounts, mini-programs, mobile applications, and additional platforms provided by the water supply companies.

01 “12345” citizen service hotline

Materials required

- ▶ **Contact information:** Complainer’s name, and phone number or email address, etc.
- ▶ **Content of complaint:** Address of the concern, detailed description of the situation, desired solution or action, and preferred mode of feedback, etc.
- ▶ **Additional materials (optional):** Photographic evidence, audio recordings, or video footage, as deemed appropriate to support their complaint

Handling process

- ▶ The Hotline Office of Shanghai Water Authority adheres to the “1·5·15” processing protocol to accomplish the resolution of inquiries and complaints.
- ▶ Initial contact with the user will be established within 1 day. Straightforward inquiries are resolved within a period of 5 working days, and complex or challenging matters are concluded within a timeframe of 15 working days.
- ▶ In exceptional cases that necessitate the implementation of engineering solutions and thus cannot be completed within the standard 15 working days, an extension request may be filed. Consequently, the processing timeline may be extended by increments of 15, 30, 60, or 90 calendar days, as appropriate.
- ▶ Upon completion, the work orders are promptly closed through the hotline processing system and the status is promptly communicated to the 12345 Citizen Service Hotline. Subsequently, the hotline is responsible for conducting follow-up satisfaction assessments with the complainer.

02 Water supply companies’ response to complaints

- ▶ Water users are invited to lodge complaints and offer suggestions via the service channels provided by water supply companies.

For instance, customers of Shanghai Chengtou Water Group Co., Ltd.

Users can conveniently submit complaints through a single click using the Shanghai Water Supply mobile app, WeChat and Alipay mini-programs (navigate to “Services - Comments and Suggestions - Complaints”), or the Group’s official website (follow the path “Customer Service - Service Request - Comments and Suggestions - Complaints”). Alternatively, customers may dial 962740 to lodge a complaint directly. In the complaint submission process, customers are required to provide the address of concern, a detailed description of the situation, and a contact number (optional). Upon receipt of a complaint, Shanghai Chengtou Water Group will process it according to the Water Supply Customer Service Acceptance Management Standards and will communicate the status of the complaint’s progress to the customer within 3 working days. Customers who have submitted their complaints through online channels can track the progress by accessing “My Services” in their personal account section.

Chapter 3 Enhancing Cost-Effectiveness and Efficiency to Forge a Resilient and Agile Water Supply Infrastructure

Shanghai Water Authority and water authorities at the district level urge water supply companies to prioritize the enhancement of customer satisfaction and perceived value as both the foundation and ultimate goal of their services. By making concerted efforts to increase connection efficiency, diminish connection expenses, and bolster the resilience and safety of connections, these companies can significantly elevate the efficiency and quality of water supply services. In doing so, they’d contribute to creating a world-class business environment in Shanghai.



I. Reducing the Time Required for Water Supply Connection

1. Streamlining water supply access procedures

Water supply companies, by benchmarking against industry best practices, are committed to enhancing operational efficiency, minimizing processing timeframes, and elevating service standards. They are dedicated to the ongoing refinement and reengineering of their water supply access procedures.

Shanghai's water supply access reform has undergone significant evolution, advancing from its initial Version 1.0 to the present Version 6.0. This transformation has markedly streamlined the water supply connection procedure, reducing it from a 5-step process that originally required 31 working days to a single-step process with a maximum duration of 6 calendar days. Consequently, the efficiency of Shanghai's water supply access services now rivals the highest global standards.

1 Step:
In Shanghai, all construction projects are required to submit applications for water supply access via the Shanghai Construction Project Joint Review and Sharing Platform, thereby condensing the water supply access procedure into one single step.

6 Calendar days:
Upon receipt of the user's application for water supply access, the water supply service provider is tasked with completing the construction work for the pipeline engineering and water supply connection within a timeframe of 6 calendar days.



Shanghai's Water Supply and Drainage Access Reform Initiative Version 6.0

Case: Improving the efficiency of water supply access

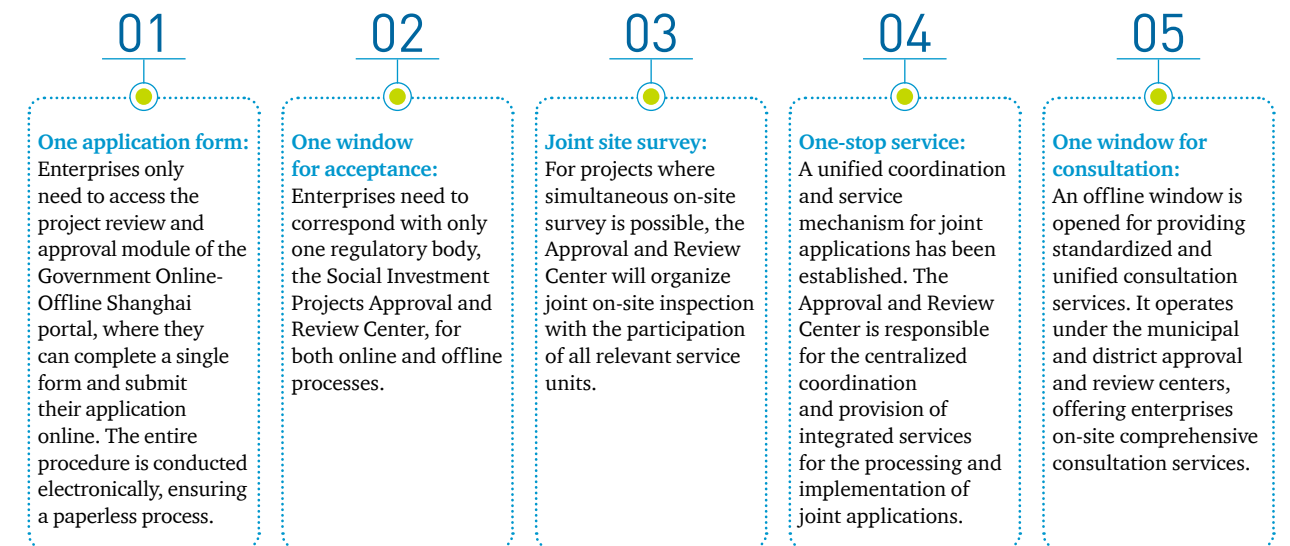
In mid-2023, a shipbuilding group company, citing the construction requirements of its shipbuilding base, submitted a request to Shanghai Chengtou Water Group Co., Ltd. for the provision of construction water services.

Chengtou Water Group swiftly assembled a team to finalize the water supply connection plan, ensuring seamless interdepartmental collaboration and the expedited completion of all necessary administrative approvals. Construction work commenced on July 20, with an initial projected timeline of 6 days. Throughout the construction phase, the company orchestrated a coordinated effort, and thanks to the diligent efforts of the staff working extended hours, the project reached completion and water was successfully supplied on July 22, 4 days ahead of the schedule. Moreover, under the favorable policy stipulations, the water connection charges were exempted. This display of proactive and efficient action underscores the success of Shanghai's business environment reforms, mirroring the city's standing as a leading international metropolis.

2. Joint implementation of water, electricity, gas pipeline and network projects

To tangibly resolve the challenges encountered by enterprises, including the need to navigate multiple authorities and undertake repetitive tasks, and to enhance the efficiency and expedite the processes of municipal utility services, Shanghai municipal government has introduced an integrated service for the concurrent application and installation of water, electricity, and gas pipelines and networks for construction projects involving new builds, renovations, or expansions with a total investment exceeding one million yuan. This streamlined service facilitates a unified application process, centralized intake, collaborative site assessments, comprehensive service delivery, and centralized consultation. The joint application and implementation mechanism allows for concurrent on-site inspections by water, electricity, and gas services, creating a seamless end-to-end workflow from the initial application to the final connection of utilities to make sure that "utilities are all available before commencement of construction".

The "concurrent application and installation of water, electricity, and gas pipeline and network" service is characterized by its "Four Ones" approach, which aims to optimize efficiency:



Case: Concurrent application and installation of water, electricity, and gas pipeline and network services making sure that utilities are readily accessible

A Shanghai-based real estate development project secured a construction permit on New Year's Eve, with concurrent pre-arranged access to water and electricity services. This strategic coordination allowed the project to access public utilities immediately. As a result, the construction project was completed two to three months ahead of the initial schedule.

Previously: Enterprises can only request temporary water and electricity connections after securing the construction permit. The process was often time-consuming, taking two to three months to complete due to the involvement of multiple regulatory bodies, stringent material requirements, and complex procedures.

Under the "concurrent application and installation of water, electricity, gas pipeline and network" initiative, review and approval departments now offer proactive cross-departmental services. They streamline, coordinate, and optimize the approval processes, conducting joint site surveys and on-site discussions to address project routing and difficulties encountered during the connection phase. As a result, users can now obtain both the construction permit and nearly simultaneous water and electricity connections at the construction projects approval and review center.

This integrated approach significantly reduces time and equipment costs for enterprises, transitioning from "multiple trips and repeated visits" to "accelerated progress." It aids in the early commencement and implementation of the real estate project.

Enterprise feedback In the subsequent visit, the agent of real estate developer said: "In the past, the process of securing access to utilities such as water, electricity, gas, and communication networks involved visiting multiple service windows. We met significant challenges due to the complexity of procedures, the multitude of documentation, and the extensive duration, making the process highly inconvenient. The introduction of the joint application and installation services has streamlined this process; now, applications and documentation can be completed online. Furthermore, for any inquiries, a visit to the government service hall will suffice, where dedicated staff are available for consultation and processing, offering 'one-stop' services to enterprises."

II. Fully Implementing the Policy of Free-of-charge Water Supply Access

Shanghai Water Authority and the water authorities at the district level are committed to enforcing the directives outlined in the *Opinions on Cleaning Up and Regulating Charges in the Urban Water Supply, Electricity Supply, Gas Supply, and Heating Industries to Promote High-quality Development*, as well as adhering to pertinent Shanghai regulations. They have introduced complimentary external line connections for water supply access initiatives, thereby reducing user expenses and invigorating market dynamics.

1. Cleansing unjustified charges for water supply access

Shanghai Municipality has promulgated the *Notice on the Initiative to Regulate Tariffs within the Municipal Water, Electricity, and Gas Supply Sectors*. This initiative eliminates a range of unjustified fees associated with water supply access, including those levied for initiation phase, connection engineering expenses, and the calibration of water metering devices. It also aims to optimize the tariff structure within the water supply industry, thereby reducing the financial burden on water users.



Notice on the Initiative to Regulate Tariffs within the Municipal Water, Electricity, and Gas Supply Sectors

Water supply initiation: The initiation phase of water supply access services has seen the elimination of various fees previously charged to customers. These include connection fees, capacity enhancement fees, and application fees, which are akin to account opening charges. Additionally, fees such as valve operation charges, completion verification fees, line measurement fees, pipeline detection fees, pipe coupling charges, water drilling engineering fees, and drawing fees, which are similar to engineering charges, have also been abolished.

Connection engineering: Within the designated areas for urban planning and construction, water supply companies are required to extend their investment boundary up to the red line of the user's property plot. Except as otherwise stipulated by laws, regulations, and pertinent policies, users shall not be liable for any costs incurred beyond the property plot red line.

Meters: Government departments and relevant institutions are strictly prohibited from charging mandatory fees for the calibration of water supply meters. In cases where water supply companies or users voluntarily engage third-party institutions to calibrate their meters, the costs shall be borne by the party initiating the calibration service, following the principle of "who commissions, who pays." If a meter is found to be defective upon calibration, the water supply company shall cover the calibration costs and provide a free replacement with a properly calibrated meter to the user. It is strictly forbidden to charge users for the cost of metering devices.

Miscellaneous fees: It is strictly prohibited for any entity to levy additional charges on users when collecting water supply fees on behalf of the water supply company. Should the government have already assumed responsibility for the costs associated with the construction, installation, upgrading, maintenance, and repair of the water supply network within the property boundary lines, no further charges may be collected from the users.

2. Complimentary access services for water supply connection projects

Water supply companies offer complimentary access services, encompassing the application for water supply connections, the execution of water supply connection projects, and the provision of external line connection services. These services are extended without charge for a range of water supply connection projects, with the ongoing objective of reducing the connection costs for customers.

- ▶ The application for connection services is handled at no cost to customers.
- ▶ Service providers do not impose fees for water supply connection works that link the property boundary line to the municipal water supply network.



Service Guide of Shanghai Municipality on Joint Application for Installation of Water, Electricity, Gas Pipelines and Networks



Service Guide for Water Supply Connections

III. Enhancing Water Supply Safety and Reliability

Shanghai Water Authority, water authorities at the district level and water supply companies in Shanghai are committed to a moderately proactive approach in advancing infrastructure development and the renewal of aging facilities. Adhering to the principles of "inspecting for potential risks, promoting corrective actions, ensuring safety, and establishing long-term mechanisms," they conduct comprehensive safety inspections and rectification efforts for water supply networks. Furthermore, aligning with the objective of "one-step implementation for non-residential applications and phased implementation for residential applications," they are progressively rolling out the installation of smart water meters across Shanghai. These initiatives are designed to bolster the resilience and safety of the city's water supply system.

1. Undertaking the renovation of aging water supply networks to enhance reliability

In a sustained effort to improve water supply services and ensure their reliability, the water supply sector in Shanghai has, in recent years, undertaken significant initiatives to update and renovate outdated and aging water supply networks.

01

Harnessing the power of technological innovation to transform and optimize water supply networks

Currently, the primary in-pipe inspection technologies utilized for water supply pipelines in Shanghai encompass Sahara Inline Tethered Inspection and p-CAT inspection methodologies. These advanced technologies facilitate the identification of leak locations and the estimation of leakage volumes, as well as the positioning and measurement of pipeline internal bladders, all without necessitating a disruption in water supply. Utilizing the data procured, three-dimensional pipeline schematics can be rendered, and temperature and pressure within the pipelines can be monitored. Additionally, video documentation is supplied, allowing staff to ascertain crucial details such as the status of valves and branch pipes, the quality of liners, the presence of sediment deposits and localized blockages. Furthermore, these technologies enable the assessment of corrosion in metal pipelines.

▶ The deployment of innovative technologies enables water supply companies to promptly assess and analyze the operational status of their networks, facilitating the ongoing enhancement of sophisticated operational and management practices for water supply networks and elevates the efficiency of the rehabilitation of aging pipeline infrastructure.

Shanghai Water Authority places a high priority on the development of pipeline information systems and encourages water supply companies to create a unified "one map" of the water supply network, streamlining the process of pipeline inspections. Utilizing this "one map" as a foundation, key points within the network are selected for the strategic placement of flow meters and pressure monitoring stations, which form the basis of a leakage management and control platform. This platform enables the real-time collection of data, allowing for the precise identification of areas within the network that are experiencing leakage. Employing a dual approach of routine patrols and remote monitoring, the dynamics of the water supply network are effectively managed. This management serves as the basis for the formulation of renovation plans for aging pipelines. In line with these plans, preliminary surveys are conducted on pipelines that exhibit advanced age, significant leakage, and unstable water pressure. During routine inspections, there is a vigilant monitoring of the operational status of the water supply network. Through surveys, feedback collection, and reporting, issues such as pipeline aging, blockages, and a decline in water quality are detected and reported.

In 2023, a total of **403** kilometers of aging water supply pipelines were renovated across Shanghai, **90** kilometers of which were large-diameter pipelines.

2. Promoting smart meters to improve water supply safety

To enhance the safety of the water supply in Shanghai, Shanghai Water Authority and district-level water authorities are actively advancing the installation of smart water meters. As a digital metering device, smart water meters can realize remote data transmission and provide users with a better water service experience through the expanded application of data. Moreover, these meters enable real-time monitoring of water consumption patterns and the detection of leaks and other losses.

Case: A smart water meter sounding a leakage alert

On March 15, a smart water meter at a residential property on Baoju Road recorded a minimum hourly flow rate of 0.05m³. The system determined that this was indicative of a water leak after the water meter and consequently issued a post-meter leak alert, dispatching a service request to the water supply company. Upon receiving the alert, staff from the water supply company conducted an on-site verification on March 16 and confirmed an internal leak behind the meter. They posted a friendly notice advising the user to conduct a self-inspection and arrange for repairs.



Throughout the process, the water supply company maintained timely communication with the user. Subsequent follow-up actions indicated that the user had successfully completed the repair of the internal leak by April 17. This proactive approach effectively prevented the waste of water resources and safeguarded the safety of water usage.

Chapter 4 Promoting Service Innovation to Render "Shanghai Water Supply" into a Highly Esteemed Brand

I. Enhancing Innovative Approaches in Water Supply Services

1. Making great strides in water supply access reform

Aligning with the highest benchmarks and excellence, Shanghai Water Authority is taking concrete steps to enhance water supply access services. It has published documents including the *Work Plan for the Continuous Optimization of the Business Environment Through Integrated Innovation in Water Supply and Drainage Access Services*, outlining reform measures, responsible agencies and project deadlines. The aim is to continuously deepen the reform of water supply access by innovative approaches, thereby providing robust support for Shanghai to further cultivate an international, law-based, and convenient business environment.



Comprehensive reform in water supply access services

Dimension	Reform measures
Regulation	<ul style="list-style-type: none"> ▶ Enhancing service regulation by establishing mechanisms for service compensation and penalties ▶ Responding to users' complaints in time through multiple channels ▶ Strengthening facility protection and ensuring coordinated management and maintenance through regular inspections
Quality	<ul style="list-style-type: none"> ▶ Disclosure the water quality indicators to the public through multiple channels ▶ Conducting satisfaction surveys among corporate users ▶ Regulate rate adjustments and ensuring transparency in water price changes by water supply companies
Efficiency	<ul style="list-style-type: none"> ▶ Streamline processes through a one-stop service on the Government Online-Offline Shanghai platform ▶ Accelerating water access processes within one single step which only costs 6 calendar days ▶ Providing free external water supply connections

2. Striving to promote digital transformation

Shanghai Water Authority has formulated the *Three-Year Action Plan for Smart Water and Ocean Management (2022-2024)*. It is committed to advancing the construction of demonstration projects for the digital transformation of water supply. With goals such as smart operation of water plants, intelligent water supply scheduling, terminal-based water quality assurance, network operation warnings, and precise water supply services, the action plan aims to drive the operational management of water supply enterprises towards greater refinement and transparency. It supports applications like online monitoring, water quality tracking, and emergency coordination, thereby launching a new chapter in the digital transformation of Shanghai's water management.

Case: The Great Collaboration Platform put into use at a water supply service station for the first time

In August 2021, the Shanghai water supply sector inaugurated the trial operation of the Quxi Road Digital Water Supply Service Station, a division of Shanghai Chengtou Water Group Co., Ltd. This marked the first deployment of the Grand Collaboration Platform at a water supply service station. As the first digital water supply station, it symbolizes that Shanghai Water Supply, a brand with over 100-year history, was transforming towards digitalization and intelligence. This initiative is a pilot application in the ongoing efforts to optimize the business environment and to deepen reforms in "delegating powers, streamlining government processes, and improving public services".

In conjunction with the digital station, the Shanghai Water Supply mobile app has been updated to offer a new personalized subscription service. This allows citizens to dynamically track their "daily water usage," providing them with daily numerical data on water consumption and enabling them to calculate water savings drop by drop. The trial operation of the Quxi Road Digital Water Supply Service Station marks a significant digital upgrade and transformation for Shanghai's water supply industry. It represents an exploration into an omni-channel operation model and the transformation towards a new service paradigm, enhancing service delivery across various platforms.

Quxi Road Digital Water Supply Service Station



Case: Nanshi Water Plant implementing block digital production operation and maintenance management model, establishing an integrated information management platform with intelligent operation, maintenance, and analysis

①

Background

To adapt to the trend of digital transformation in water supply, Shanghai Chengtou Water Group Co., Ltd. has chosen the century-old Nanshi Water Plant as a demonstration site for smart water management. Aiming to implement a block digital production operation and maintenance management model, it has constructed an integrated information management platform that combines intelligent operation, maintenance, and analysis. As a result, it has been transformed into the first multi-dimension digital water plant powered by digital twins and digital models in Shanghai.

②

Implementation

Nanshi Water Plant deeply utilizes digital technologies such as digital twins, the Internet of Things (IoT), big data, and artificial intelligence to establish a smart water management system and a platform powered by digital twins and simulation technologies, collecting more data during production process. By mining value from vast datasets, the plant applies this data to practical production management, thereby enhancing the digitalization, intelligence, and precision of the production process. Furthermore, based on digital twin platform, Nanshi Water Plant has developed a digital closed-loop for food-grade water quality management system and achieved digital control of product safety, significantly enhancing the quality of production management and the capacity for high-quality drinking water supply. Through the construction of a digital water plant, the goal of improving quality and efficiency, and achieving high-quality development has been realized, helping citizens to enjoy high-quality drinking water.

③

Achievements

Since the platform's launch, Nanshi Water Plant has achieved a service pressure fluctuation of finished water with an absolute value of less than 2KPa. Although there is an 8.66% increase in production water volume, the specific energy consumption for water production has been reduced by 4.1%, the specific energy consumption for water output has decreased by 8.69%, the average use of various chemicals has been lowered by 2.6%, and the average backwash cycle for sand filter beds has been extended by 10%. These improvements have not only enhanced both the volume and quality of water supply but also achieved the goals of energy conservation and reduced operational costs, highlighting the crucial role of digital technology in water plant operation.

Nanshi Smart Water Plant



3. Making great strides in system integration

To further deepen the reform of water supply access, Shanghai Water Authority has provided substantial support to the relevant departments and played a key role in establishing the Shanghai Construction Projects Review and Approval System. It has placed a high priority on system integration and is continuously advancing the consolidation and streamlining of similar procedures, aiming to maximize synergistic effects.

Selective smart services provided by an integrated system



- ▶ Log in to the "Shanghai Construction Projects Review and Approval System" module on the Government Online-Offline Shanghai platform, and click on "Matters to be Handled" and "Application Guidance" sections
- ▶ Click "Selective Smart Guidance" and select the nature of the construction, the project type, the investment management approach and the method of land acquisition method.
- ▶ Based on your selections, check other conditions as needed, such as "whether the construction is located in a protection area" and "safety considerations for engineering construction".
- ▶ An automatically generated flowchart will outline the required procedures, accompanied by a service guide and contact information.

While collaborating to establish the Shanghai Construction Projects Review and Approval System, Shanghai Water Authority has remained unwavering in its commitment to implementation, ensuring the precision of the workflow.

1

▶ Conducting field research

Shanghai Water Authority conducts thorough inspections across district-level water authorities, service counters of water supply companies, and service centers in various districts. Additionally, it collects information on the problems and challenges each district faces regarding water supply access, offering guidance and summarizing the progress of access initiatives.

2

▶ Requirements list

Shanghai Water Authority actively collects information and issues water supply access feedback forms to water supply companies. These forms encompassed details such as the overall project status, selected case studies, processing times, approval documents, and screenshots of the processing website. Through this process, the Authority conducts an in-depth study of the relevant workflows and submits suggestions and requirements to the collaborative review and sharing platform.

3

▶ Platform operation training

To enhance the efficiency and quality of water supply access services, Shanghai Water Authority has organized multiple training sessions on platform module operations for staff from Shanghai Chengtou Water Group Co., Ltd. and other water supply companies. In these training sessions, the Authority offered detailed and in-depth explanations of the policies that have been implemented to advance water supply access reform in the previous stages. It conducted comprehensive discussions on issues encountered in the work and offered guidance. Finally, it outlined requirements for the subsequent phase of work.

4

▶ Regular verification

Under the guidance of Shanghai Water Authority, personnel from water supply companies are assigned to the water supply service window at the review and approval center to ensure timely entry of project information. The project information on the platform is verified regularly by dedicated staff, and any discrepancies are reported immediately.

Thanks to thorough preparations made in initial stages, water supply data has been precisely integrated with Shanghai Construction Projects Review and Approval System, fully leveraging the integrated system's efficiency. This has led to the simplification of similar procedures and enhancing citizen satisfaction and perceived benefits.

II. Satisfaction Survey Among All Sectors of Society

According to *Notice of the General Office of the Shanghai Municipal People's Government on Issuing the Action Plan of Shanghai Municipality on Strengthening Integrated Innovation and Continuously Optimizing the Business Environment*, Shanghai Water Authority has conducted a satisfaction survey on water supply access services for 2023, and the overall satisfaction rate reached 99.66%.

The survey was conducted aiming to enterprise users who had requested water supply access services in Shanghai. Respondents included 14.7% females and 85.3% males. The questionnaire addressed various stages of the water supply access service, encompassing five key indicators: preliminary consultation and application acceptance, on-site inspections and formulation/review of water supply plans, project quality inspection, signing of the water supply contract, and general service satisfaction.

