Tokyo Waterworks Management Plan 2016

~ Inheritance world leading water system to the next generation ~
(2016~2020)

Management Policy
Tokyo Waterworks continues to provide services to supply steadily potable delicious water of high quality that is an essential lifeline to support citizen's life and urban activities of Capital Tokyo.
Tokyo Waterworks also takes all possible measures to ensure risk management, makes efforts to establish a staunch management system as well as to conduct efficient and sound business management and performs reliable business operations.
Furthermore, Tokyo Waterworks launches various initiatives of long-sighted approach, further develop its world leading water system and extend the resulted information internationally and domestically and passes them to the next generation.

Looking ahead to the 2018 IWA World Congress & Exhibition, the 2020 Tokyo Olympic & Paralympic Games, and the future beyond, we will collaborate with various organizations to further develop the Tokyo Waterworks system, one of the finest in the world, and communicate our achievements both in Japan and abroad.
**Major Initiatives**

**Water Resources Measures**
- Securing water resources (Yanba Dam)
- Proper management of water conservation forests

**Restructuring waterworks essential facilities**
- Developing alternative facilities in preparation for water-purification plants’ renewal (Sakai and Misato Purification Plants)
- Duplexing of water conveyance facilities. Duplexing and networking of transmission pipes
- Establishing and expanding of water supply stations

**Restructuring Tama Area Waterworks**
- Restructuring facilities
- Networking of transmission and distribution pipes

**Suitable support for water quality**
- Water treatment according to raw water quality
- Enhancing the Tokyo High Quality Management Program

**Developing facilities against disasters**
- Reinforcing the body of reservoirs (Murayama kami Reservoir)
- Covering purification facilities (Renewal Sakai Purification Plant, etc.)
- Reinforcing earthquake-resistance of distribution reservoir
- Replacing distribution pipes by earthquake-resistant-joint pipes
- Replacing service pipes by earthquake-resistant-joint at evacuation centers, etc.
- Developing service pipes under private roads
- Installing and reinforcing utility-chute power generation facility
- Measures against floods

**Promoting shift to water service system without receiving tank**
- PR to promote water service system without receiving tank
- Model project to introduce water service system without receiving tank in elementary and junior high schools
- Initiatives to promote shift (estimation service, etc.)

**Response in the event of disaster occurrences**
- Enhancing emergency measures (Emergency water supply stations)
- Enhancing transmission of information

**Initiatives to realize and demonstrate understanding of waterworks**
- Tokyo Waterworks Water Safety Checkups (Visiting nearly all 7.5 million households by 2019)
- Development of various local PRs (Enhancing the Waterworks Caravan, PRs at construction sites, etc.)

**Energy and Environment Measures**
- Energy efficiency (Introducing solar power generation (Approximately 40% of the facilities’ installation goal owned by the Tokyo Metropolitan Government)
- Improving the hydraulic efficiency of water pumps (Improving sludge removal efficiency of water pumps)

**Conservation of the Tamagawa Josui Canal**
- Appropriate conservation management of the Tamagawa Josui Canal
- Conservation of the aquatic and slopes in the midstream sections, installation of information plaques, etc.

**Contribution to other water business entities in Japan**
- Cooperation with other water business entities in Japan (Conducting trainings, lending practical training fields, fiduciary service)

**Contribution to other water business entities abroad**
- Promoting international development (Human resources development, project development, and information dissemination)

**WATER & TOKYO**

**TOKYO WATERWORKS INNOVATION PROJECT**

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**Financial basis (well-planned and efficient financial operation)**

**Goals**

**Ceaseless management efforts**
Cost reduction, securing revenue of ¥15 billion, and maintaining current charge levels (excluding tax) for 5 years between FY 2016 and FY 2020.

(Units: ¥1,000,000)

<table>
<thead>
<tr>
<th>Items</th>
<th>FY 2016</th>
<th>FY 2017</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost saving by means of efficiency drive of managerial activities</td>
<td>63</td>
<td>237</td>
<td>252</td>
<td>327</td>
<td>522</td>
<td>1,401</td>
</tr>
<tr>
<td>Reduction of the regular cost</td>
<td>1,569</td>
<td>1,850</td>
<td>2,201</td>
<td>2,328</td>
<td>2,379</td>
<td>10,327</td>
</tr>
<tr>
<td>Income-earning by means of effective use of assets, etc.</td>
<td>1,312</td>
<td>339</td>
<td>467</td>
<td>512</td>
<td>642</td>
<td>3,272</td>
</tr>
<tr>
<td>Total</td>
<td>2,944</td>
<td>2,426</td>
<td>2,920</td>
<td>3,167</td>
<td>3,543</td>
<td>15,000</td>
</tr>
</tbody>
</table>

**Sound financial operations**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Calculation Formula</th>
<th>FY 2014 (Actual)</th>
<th>FY 2016 - FY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of the amount of redemption money for principals and interests against the charge income (%)</td>
<td>(Interest payment + principal redemption) ÷ charge income</td>
<td>12.4 level lower than FY2014</td>
<td></td>
</tr>
<tr>
<td>Ratio of the amount of corporate bonds outstanding against the charge income (%)</td>
<td>Closing balance of enterprise bonds ÷ charge income</td>
<td>82.3 level lower than FY2014</td>
<td></td>
</tr>
<tr>
<td>Ordinary balance ratio (%)</td>
<td>Operating revenue + non-operating revenue ÷ (operating costs + non-operating cost)</td>
<td>114.2 100% or more</td>
<td></td>
</tr>
</tbody>
</table>

*1. In the calculation of ratio of redemption money for principal and interest, refinancing bonds are excluded.
2. Real value of FY2014 is calculated including taxes.

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**Fiscal income and expenditure plan**

(Units: ¥1,000,000)

<table>
<thead>
<tr>
<th>FY</th>
<th>Charges (Bond issue, National subsidies, Transferred from general account)</th>
<th>Others</th>
<th>Total</th>
<th>Operating expenses</th>
<th>Interest Payment</th>
<th>Annual depreciation &amp; impairment loss</th>
<th>Construction and improvement (¥)</th>
<th>Total</th>
<th>Income and expenditure experienced under planned overhaul</th>
<th>Actual (of the end of FY2020 Plan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>318,965</td>
<td>16,360</td>
<td>1,162</td>
<td>6,805</td>
<td>65,058</td>
<td>185,716</td>
<td>209,293</td>
<td>7,583</td>
<td>20,958</td>
<td>106,697 (41,866)</td>
</tr>
<tr>
<td>2017</td>
<td>318,419</td>
<td>18,865</td>
<td>455</td>
<td>6,355</td>
<td>48,260</td>
<td>187,614</td>
<td>250,836</td>
<td>5,798</td>
<td>20,308</td>
<td>110,857 (41,436)</td>
</tr>
<tr>
<td>2018</td>
<td>318,874</td>
<td>25,613</td>
<td>455</td>
<td>6,589</td>
<td>45,620</td>
<td>195,883</td>
<td>299,335</td>
<td>5,866</td>
<td>17,465</td>
<td>135,887 (44,164)</td>
</tr>
<tr>
<td>2019</td>
<td>321,963</td>
<td>25,985</td>
<td>455</td>
<td>6,748</td>
<td>46,075</td>
<td>197,765</td>
<td>314,814</td>
<td>5,793</td>
<td>16,928</td>
<td>135,867 (44,667)</td>
</tr>
<tr>
<td>2020</td>
<td>316,773</td>
<td>24,649</td>
<td>72</td>
<td>6,371</td>
<td>46,063</td>
<td>198,782</td>
<td>312,716</td>
<td>5,938</td>
<td>17,899</td>
<td>123,389 (45,936)</td>
</tr>
<tr>
<td>Total</td>
<td>1,260,855</td>
<td>132,287</td>
<td>2,089</td>
<td>23,164</td>
<td>229,146</td>
<td>1,963,175</td>
<td>2,126,247</td>
<td>42,908</td>
<td>90,932</td>
<td>866,669 (341,931)</td>
</tr>
</tbody>
</table>

*1. Bond issues and principal redemption money do not include those refunded.
2. Construction & improvement costs include amounts in the accumulated fund for the renewal of large purification plants, but do not include amounts from revenues of that fund or reserves of the reserve fund for facilities improvement of Okutama waterworks operations.
3. Consumption tax, including local consumption tax, of 8% are included in figures of income and expenditure.
Operation of the essential lifeline

**Stability (supply of water continuously in 24 hours)**

- **Maintaining alternative purification facilities**
  - Facility Name | Category | Year of completion
  - Wadabori Water Supply Station Expansion | New construction | FY 2021
  - Kamikitazawa Water Supply Station | New construction | FY 2019
  - Kohoku Water Supply Station | New construction | FY 2018

- **Duplexing and networking of water transmission pipes**
  - Facility Name | Category | Year of completion
  - Second Asaka Water Take Tunnel | FY 2022
  - Second Asaka-Higashi-Murayama Line | FY 2018

- **Establishing and expanding of water supply stations**
  - Facility Name | Category | Year of completion
  - Misato Purification Plant | Expansion | FY 2019
  - Sakai Purification Plant | Expansion | FY 2021

- **Restructuring Tama Area Waterworks**
  - Facility Name | Category | Year of completion
  - Arakawa River | Expansion | FY 2020

**High Quality (supply of potable delicious water)**

- **Promoting shift to water service system without receiving tank**
  - Estimate Service
    - Select 2 companies freely who offer estimate service*, and request estimation
    - Tokyo Waterworks provides necessary information such as water pressure to those stores.

- **Consultation Service**
  - Presenting and explaining estimation
  - Sending detailed technical manual explaining the construction description in the estimation

- **Other Initiatives**
  - Estimation Requester
  - Introducing financial institutions that handle financing for management associations (New support service)

**Development of initiatives and sending the relevant information**

- **Dialogue with customers**
  - (for realization and establishment of credibility)
    - Tokyo Waterworks Water Safety Caravan
    - To make customers realize about safe, delicious and high quality water, we gain an accurate understanding of customer needs.

- **Preparation for various threats**
  - (development of advanced risk management system)
    - Pipe Jointing by Earthquake-Resistant Joins in Water Supply Pipes Connected to Major Facilities
    - Preparation for various threats
      - Promotion of earthquake-resistant pipes
      - Pipe jointing by earthquake-resistant joint pipes
      - Pipe jointing by earthquake-resistant joint pipes
    - Enhancing emergency measures
      - Emergency Water Supply Stations
        - To find emergency water supply sites easier, we fly flags at water supply points and evacuation centers.

- **Enhancing transmission of information**
  - Posting information about suspension and availability of water on our website (Start operation service from FY 2020).

**Samples of water quality**

- **Simple water quality inspections**
  - Customer
    - Sample water test (on-site inspection)
    - Visual check the water meter
    - Results of inspections and PR from the Tokyo Waterworks

**Various community PR developments (Enhancing the Waterworks Caravan)**

- **School Waterworks Caravan**
  - Elementary schools
  - Middle schools
  - Public lectures, etc.

- **Capital Central Agencies**
  - National Diet, Central agencies, Government Agencies, etc.

**Projects**

- **High Quality water**
  - Water supply to essential lifeline
  - Promotion of earthquake-resistant pipes
    - Pipe jointing by earthquake-resistant joint pipes
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**Target Indicators for Facility Development**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>FY 2014</th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017</th>
<th>FY 2018</th>
<th>FY 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water resource availability for steady water supply at drought expected to happen once in every 10 years</td>
<td>93</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ratio of water supply in an accident</td>
<td>78</td>
<td>83</td>
<td>84</td>
<td>85</td>
<td>86</td>
<td>87</td>
</tr>
<tr>
<td>Rate of water supply from distribution mains</td>
<td>70</td>
<td>73</td>
<td>74</td>
<td>75</td>
<td>76</td>
<td>77</td>
</tr>
<tr>
<td>Rate of earthquake-resistant distribution reservoirs</td>
<td>70</td>
<td>89</td>
<td>89</td>
<td>90</td>
<td>91</td>
<td>92</td>
</tr>
</tbody>
</table>

*Figures in the column "After 10 years" are targets set in Master Plan for Construction of Tokyo Waterworks Facilities. 2. Years in brackets shown in the column "Target/FY2020" or the column "after 10 years; FY2025" are years of completion of development projects.*

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**Main project plan for facilities improvement**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Scope</th>
<th>Planned amount by FY</th>
<th>FY 2016</th>
<th>FY 2017</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water resources and purification plans improvement project</td>
<td></td>
<td></td>
<td>164,000</td>
<td>21,000</td>
<td>32,000</td>
<td>32,000</td>
<td>32,000</td>
</tr>
<tr>
<td>Transmission distribution facilities improvement project</td>
<td></td>
<td></td>
<td>536,000</td>
<td>104,000</td>
<td>108,000</td>
<td>108,000</td>
<td>108,000</td>
</tr>
<tr>
<td>Water supply facilities improvement plan</td>
<td></td>
<td></td>
<td>50,000</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>750,000</td>
<td>150,000</td>
<td>150,000</td>
<td>150,000</td>
<td>150,000</td>
<td>150,000</td>
</tr>
</tbody>
</table>

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**Supporting Bases**

**Human Resources (recruitment and fostering/development)**

1. **Securing human resources**
   - Establishing a risk management system that can respond accurately to various threats
   - Establishing an operation system for steadily restructuring waterworks facilities
   - Securing human resources to support these systems

2. **Fostering human resources**
   - Being responsible for planning and management, Tokyo Waterworks promotes mutual exchange with Supervised Organizations, which are responsible for work on-site.
   - Promoting human resources training together with Supervised Organizations

**Management system (including group management)**

1. **Division of roles in business operations**

2. **Strengthening our unified business operations (promoting group management)**

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**Human Resources**

- **Tokyo Waterworks Group**
  - Formulating management policies and plan for facilities improvement, water quality control, maintaining and managing important facilities, wide area water supply operation, etc.
  - Supervised Organizations
    - Supervised Organizations (Core Duties): Supervise and coordinate the use of public resources in the business, promote strategic management, and manage private contractors.
    - Supervised Organizations (Semi-Core Duties): Supervise and coordinate the use of public resources in the business, promote strategic management, and manage private contractors.
  - Private Contractors
    - Private Contractors (Regular Duties): Construct construction, pipeline construction, water meter inspections, etc.

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**Diagram**

[Diagram showing the division of roles and responsibilities within the Tokyo Waterworks Group]