

DENVER WATER'S GREEN BOND REPORT

FISCAL YEAR 2018



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Denver Water

The Board of Water Commissioners, commonly known as Denver Water, was established in 1918 by the people of the City and County of Denver, Colorado (the “City”), as an independent, autonomous, non-political agency with duties and responsibilities specifically set forth in the charter. Since that time, the Board has supplied water to the citizens of Denver and contract distributors in the metropolitan area in accordance with charter directives.

Denver Water has a five-member governing body, the members of which are appointed by the Mayor of the City for overlapping fixed six-year terms. The Board is charged with ensuring a continuous supply of water to the citizens of Denver and Denver Water’s suburban customers. Commissioners are not subject to term limits.

In fiscal year 2018, Denver Water had an operating budget of \$246.7 million and a five-year, \$1.3 billion capital improvement program. It employed more than 1,100 people and served approximately 1.4 million people (a quarter of Colorado’s residents) within its 335-square mile service area. Denver Water pumped an average of 80.7 million gallons per day of drinking water through 3,100 miles of water mains.

Denver Water Administration Complex, Administration Building



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Environmental stewardship and sustainability

Denver Water collects, stores, treats and distributes water to meet the needs of approximately 1.4 million people in the Denver metropolitan area. As a result, Denver Water's environmental footprint across Colorado is significant. Denver Water has taken a leadership role in understanding and promoting sustainability in the state and in water utility planning through continued environmental stewardship. Environmental stewardship is one of the key priorities in Denver Water's Strategic Plan. In 2016, guiding principles for an environmental stewardship statement were adopted by Denver Water's CEO. These include adherence to best practices and performance standards in environmental sustainability, dedication to sustainable growth and operation of its assets, and leading by example to share experience and expertise. Denver Water's Sustainability Guide for 2018-2020 was completed in 2017 and was endorsed by the executive staff and the Board in 2018. These actions further expand the concept of sustainability at Denver Water by setting concrete goals, standards and commitments in six major resource areas: energy and transportation, water, materials, land and ecosystem, people and infrastructure and assets.

Examples of activities fostering Denver Water's commitment to sustainability include:

- Strengthening the health of Colorado's rivers and streams through the Colorado River Cooperative Agreement, which aims to ensure more water in the Fraser and Blue rivers in dry years, funds multiple water improvement and stream restoration efforts and improves or changes stream channels to strengthen aquatic habitats.
- Generating clean, renewable energy using seven hydroelectric plants in Denver Water's system. These plants generated more than 57 million kilowatt hours of energy in 2018, almost enough to power all of Denver Water's facilities, from pump stations to treatment plants.
- Protecting endangered species through participation in the Colorado River Recovery Program and the Platte River Recovery Implementation Program.
- Protecting watersheds through partnerships with the U.S. Forest Service to restore forest health on more than 38,000 acres of forest land and by working with multiple federal agencies and other Front Range water providers to identify and prioritize at-risk watersheds.
- Using water efficiently through water conservation campaigns as well as reusing certain water supplies for water exchanges or in the recycling plant.
- Tracking Denver Water's greenhouse gas footprint since 2008 through participation in the Climate Registry.
- Reducing waste through materials recycling, composting, efficient lighting upgrades at Denver Water's facilities and investigating strategies to reduce vehicle idling and water lost to evaporation.
- Developing environmental management systems for treatment plants and the Water Quality Laboratory in 2016.
- Integrating environmental considerations into daily operations and identifying and tracking progress toward sustainability goals including production of annual goal report card.

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- Hiring a sustainability manager in 2016 and an energy management specialist and sustainability program assistant in 2017.

Denver Water's efforts in the area of sustainability and environmental stewardship have been recognized through multiple awards:

- EPA WaterSense Excellence Awards (2015 and 2014).
- Global Water Award for Water Performance Initiative of the Year (2015).
- Association of Municipal Water Agencies' Platinum Award for Utility Excellence (2015).
- Trout Unlimited River Stewardship honoree for advances in water conservation and watershed stewardship and for working with conservation groups to improve conditions on the Colorado River through the "Learning by Doing" partnership (2016).
- Gold Leader recognition by the Colorado Department of Public Health and Environment's Environmental Leadership Program (2017).
- Blue Star Recycler's Star Partner Award (2017).
- City and County of Denver Office of Sustainability's "Love This Place" Award for Implementer of Sustainability (2018).
- Association of Metropolitan Water Agencies' Award for Sustainable Water Utility Management (2018)

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Green Bond issuance

Denver Water issued its inaugural Green Bonds (Water Revenue Bonds Series 2017A) in the amount of \$160.67 million in May 2017. The purpose of labeling these as Green Bonds was to allow investors seeking to invest directly in bonds that finance environmentally beneficial projects to evaluate the environmental merits and benefits of the projects financed by the bonds. No independent certification was obtained with respect to the treatment of the bonds as Green Bonds.

Green portfolios, investors with documented environmental and social-impact-investing mandates, were given priority in the hierarchy by which the underwriter allocated the purchase orders for the bonds. 15 separate, dedicated green investors looked at the transaction, of which four placed \$18.03 million in orders — 12 percent of the total Series 2017A par amount.

Par amount:	\$142,665,000
Closing date:	May 23, 2017
Sale type:	Negotiated sale
Underwriting syndicate:	Merrill Lynch, Pierce, Fenner & Smith Incorporated Citigroup Global Markets, Incorporated Stifel, Nicolaus & Company, Incorporated
Financial Advisor:	George K. Baum & Company
Bond Counsel:	Becker Stowe Partners LLC
Disclosure Counsel:	Sherman & Howard LLC

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Green Bond projects

Proceeds from the Series 2017A Bonds are used to finance the redevelopment of Denver Water's main operating and administrative complex, known as the "Operations Complex Redevelopment Project". The Operations Complex, located at 1600 W. 12th Ave. in Denver, is comprised of equipment shops, a fleet maintenance building, a warehouse building, a trades building and space for pipe and materials storage on 34.6 acres. The site is also home to Denver Water's Administration Building that houses 600 employees. Water utility operations have been located on this site since 1881. Denver Water's Operations Complex is being redeveloped to improve the efficiency, functionality, security and safety of all operations.

Sustainability is a key factor in the design of the Operations Complex. In October 2015, the project was registered with the U.S. Green Building Council and will be submitted for certification upon completion. Denver Water expects that the project will accomplish some of the most progressive sustainability goals of any public water utility including:

- LEED® certification for the Meter Shop, Warehouse, Trades Shop, Fleet Maintenance building, Administration Building and Wellness building.
- Significant energy efficiency in the Administration Building through appropriate envelope design, high-efficiency heating, ventilation, air conditioning and lighting systems and controls.
- Energy-efficient radiant heating and cooling in new facility floors provided by a central utility plant that utilizes an existing water pipeline on-site.
- "One Water" reduction and use strategy to maximize the use of non-potable water from an on-site, ecological wastewater treatment system, including capturing rainwater through an augmentation plan, best practices in stormwater management and the reuse of water to extinction when legally possible.
- Recycling of construction/demolition debris and use of recycled materials where possible.
- Sustainable education and engagement programs to inform users of the site about the green features and empower them to actively participate in sustainable operations.

Green Bond Project Team:

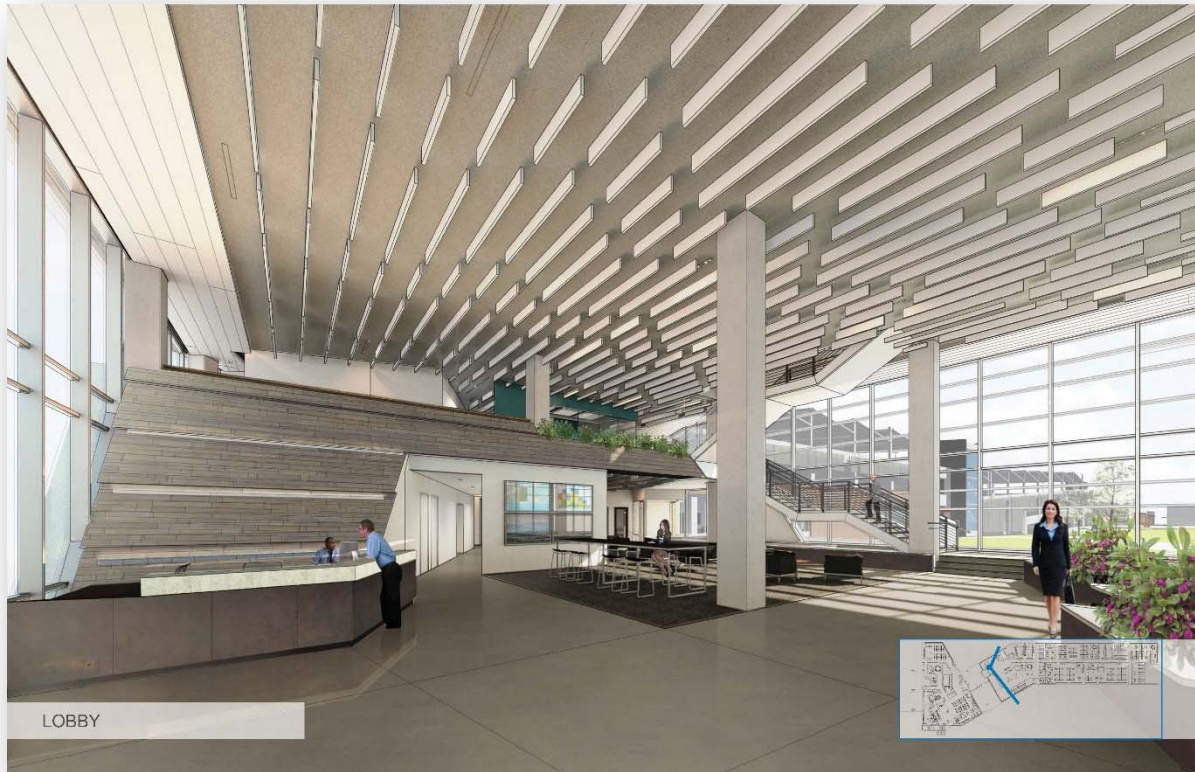
Sustainability/LEED Certification Support: Brendle Group, Stantec, Ambient Energy

Architect: RNL Design Incorporated

General contractor: M. A. Mortenson Company

Owner representative: Trammell Crow Company

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In 2016, the OCR Project was registered with the U.S. Green Building Council. The Board intends to pursue different levels of LEED certifications for all the new buildings constructed. LEED is a green building certification program offered by the U.S. Green Building Council. Projects submitted for LEED certification are reviewed by the Green Building Certification Institute, a third-party organization, and assigned points based on the project's implementations of strategies and solutions aimed at achieving high performance in sustainable site development, water efficiency, energy efficiency, materials selection, indoor environmental quality and more. There can be no assurance that any particular minimum LEED certification level will be achieved, and the failure to achieve any particular LEED certification level will not constitute a default under the bond resolution. Denver Water will not pursue a certification for the 2017A Bonds, other than LEED certification for various projects financed in whole, or in part, from the proceeds of the Series 2017A Bonds.

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At the end of 2018, the total cost of the OCR Project was estimated at \$201.9 million. Project expenditures for years 2015 and 2016 totaled \$36 million and were financed from the proceeds of the Series 2016A Revenue Bonds. Proceeds from 2017A Revenue Bonds, labeled as green bonds, of approximately \$160 million were designated for financing the majority of the remaining costs of the project for 2017 through 2020.

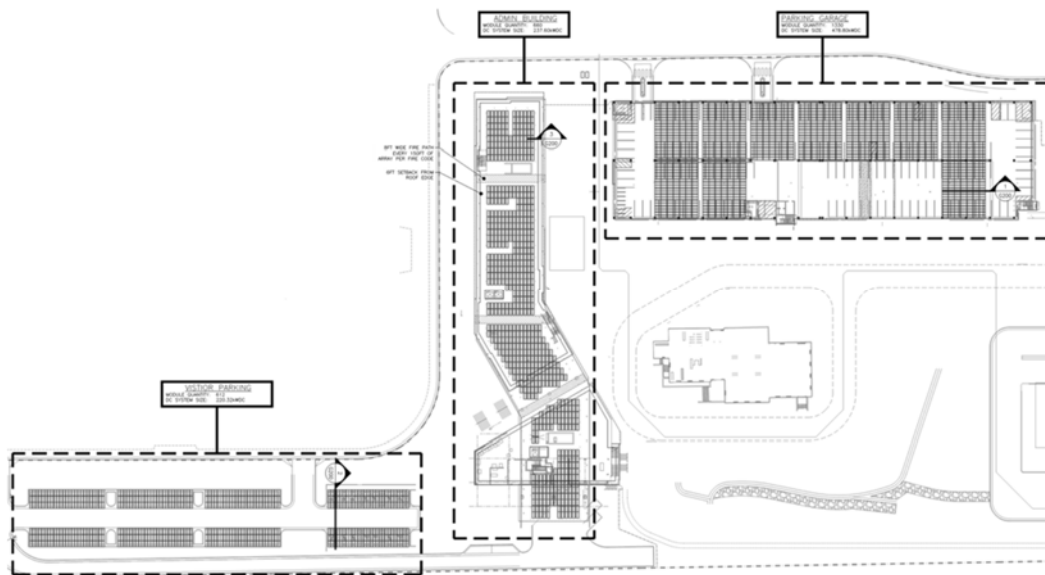


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Construction progress

The first phase of construction began in 2016 with a focus on the operational facilities. In this phase, the general contractor completed construction of the Meter Shop, Warehouse, Fleet Services building and Trades Shop, as well as the landscaping around those buildings, the relocation of an underground water pipe and the demolition of old buildings. The second phase, which started in the summer of 2017 and is expected to continue through late 2019, focuses on the Administration and Wellness buildings and a parking garage. Construction milestones for 2018 included completion of a water pipe relocation/slip line, completion of the Water Distribution building renovation, execution of the contract for the Three Stone Buildings renovation and construction of the structures for the parking garage, Administration Building (including the installation of the multi-stage treatment unit (MSTU) tank) and Wellness Building, as well as the selection of the solar power equipment provider (Phase II).

At the end of 2018, exterior brick installation for the Administration Building was nearly 90 percent complete and exterior glazing was in progress. The parking garage was expected to open in March 2019 after completion of installation of screens and exterior metal panels. Interior paint, and clinic millwork at the Wellness Building were all underway with a completion date expected in March 2019.



OCR Solar Layout design for the Administration Building, Parking Garage and Visitor Parking

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Denver Water Operations Complex, Administration Building

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Administration Building irresistible stair and exterior enclosure along south elevation

As of Dec. 31, 2018, the actual project expenditures amounted to \$148.6 million, or 74 percent of the total project budget.

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*Denver Water Operations Complex,
Wellness building, housing onsite
health clinic*



Wellness building fitness room

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Progress toward allocation to OCR Project

The net proceeds of Green Bonds were credited to a separate subaccount (2017A Capital Project Account) to facilitate tracking of unspent proceeds. The funds in the 2017 Green Bonds subaccount are temporarily invested in “permitted investments,” as defined in Denver Water’s Master Bond Resolution and the supplemental bond resolution authorizing the issuance of the 2017 Green Bonds. The following table provides the net proceeds and reimbursement of eligible expenditures through Dec. 31, 2018. To date, Denver Water allocated 69 percent of total proceeds of the Series 2017A Bonds to eligible expenses.

ALLOCATION TYPE	AMOUNT (IN MILLIONS)	% OF TOTAL
2017A Revenue Bond proceeds	\$160.67	100%
Underwriters' discount	(0.33)	
Issuance expenses	(0.34)	
Capital expenses	(110.15)	
Unallocated bond proceeds	\$49.85	31%

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Progress toward LEED certification

LEED certification involves four steps:

1. Project registration by completing key forms and submitting payment
2. Split submittal process: design-phase-credits submittal and construction-phase-credits submittal
3. Review of the LEED application by Green Business Certification Inc
4. Certification decision

Denver Water registered the OCR Project with the U.S. Green Building Council July 2, 2016. The application for LEED certification starts with a credit-submittal process, which can be split into two phases: a design-review phase and a construction-review phase. The design-review phase allows the project team to submit credits to GBCI early so they can determine whether or not those credits are on track for approval. The GBCI will mark the credits as either "anticipated" or "denied." If the project team accepts the ruling on the credits, the GBCI issues a final-design review. The GBCI rulings in both phases can be appealed by the project team through the official appeal process. Each appeal is followed by additional review by the GBCI and ruling on the credits. After the final-construction-review, results are accepted by the project team and the project receives LEED certification at Certified, Silver, Gold or Platinum levels.

The following timeline summarizes the LEED submittal process for the OCR Project:

LOCATION	DATE	SUBMITTAL TYPE
Fleet Services	Feb. 23, 2017	Final design-phase review completed
Master Site	Aug. 24, 2017	Final design-phase review completed. All prerequisites and credits pre-approved are ready to be used in individual projects
Meter Shop	Feb. 20, 2018	Final design-phase review completed
Trades Shop	Feb. 20, 2018	Final design-phase review completed
Warehouse	Feb. 6, 2018	Final design-phase review completed
Wellness building	June 5, 2018	Final design-phase review completed
Administration building	April 18, 2018	Final design-phase review completed
Three Stone Buildings	Jan. 30, 2019	Submitted for preliminary GBCI's design-phase review

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Environmental sustainability objectives for OCR Project

The following sustainability objectives have been achieved for the four completed OCR buildings:

METER SHOP

The Meter Shop is where employees test and calibrate water meters. This building is projected to meet a LEED for New Construction Gold certification level and includes the following features:

- This building is expected to save nearly 40 percent in annual energy costs and more than 30 percent in annual potable water compared to an equivalent code-compliant building.
- Nearly 90 percent of regularly-used workspaces in this building can be day-lit year-round.
- The operations in the Meter Shop enable Denver Water to continually improve and innovate processes while exemplifying leadership in water efficiency.

TRADES SHOP

The Trades Shop houses construction, electrical, environmental compliance, plumbing, metals and welding teams. This building is projected to meet a LEED for New Construction Gold certification level and includes the following features:

- This building is expected to save more than 30 percent in annual energy costs and more than 30 percent in annual potable water compared to an equivalent code-compliant building.
- Nearly 80 percent of regularly-used workspaces in this building can be day-lit year-round.
- This building houses a critical component in the project's energy efficiency, the central utility plant, which powers all buildings on the complex using a 54-inch main line with heat exchanger.
- Denver Water is committed to the responsible management and sustainable growth and operation of all our assets, both natural and built. The operations in the Trades Shop enable Denver Water to maintain our facilities in ways that are sustainable and protect the environment.

WAREHOUSE

This building is projected to meet a LEED for New Construction Silver certification level and includes the following features:

- This building is expected to save nearly 45 percent in annual energy costs and more than 30 percent in annual potable water compared to an equivalent code-compliant building.
- Nearly 90 percent of regularly used workspaces in this building can be day-lit year-round.
- This building, like others on the complex, is heated by radiant flooring, the most energy efficient heating approach in high-volume buildings. This provides a temperature-controlled environment for employees while contributing to the OCR's energy-efficiency goals.

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- The operations in the Warehouse enable Denver Water to remain steadfast in our commitment to responsible materials and waste management.

FLEET SERVICES

This building is projected to meet a LEED for New Construction Silver certification level and includes the following features:

- This building is expected to save more than 30 percent in annual potable water compared to an equivalent code-compliant building.
- Nearly 80 percent of regularly used workspaces in this building can be day-lit year-round.
- Skylights balance daylight and winter sun for efficient lighting.
- The operations in Fleet Services enable Denver Water to meet our greenhouse gas emissions targets and maintain a healthy and safe work environment.

WELLNESS BUILDING

This building is projected to meet a LEED for New Construction Gold certification level and includes the following features:

- This building is expected to save 30 percent in annual energy costs and more than 35 percent in annual potable water compared to an equivalent code-compliant building.
- Over 75 percent of regularly used workspaces in this building can be day-lit year-round.
- Both an on-site clinic and fitness equipment are housed in this facility. An on-site nursing staff and wellness programs are also available to employees.

ADMINISTRATION BUILDING

This building is projected to meet a LEED for New Construction Platinum certification level and includes the following features:

- This building is expected to save 36 percent in annual energy costs and more than 35 percent in annual potable water compared to an equivalent code-compliant building.
- Over 90 percent of regularly used workspaces in this building can be day-lit year-round.
- Like other facilities on the Operations Campus, this facility will provide centralized waste bins for municipal waste. By including compost, recycling and landfill options at the same site, employees are encouraged to properly sorting waste, thus diverting additional materials from the landfill.
- The parking garage will provide preferred parking for electric vehicle charging.
- “One Water” system will minimize use of potable water and maximize use of non-potable water. This onsite, ecological-treatment system will collect and treat wastewater from the building through natural wetlands and reuse it for toilet flushing and irrigation.

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Denver Water Operations Complex, Central Utility Plant (CUP). The Central Utility Plant is located in the Trades Shop building and is the primary mechanical system for the campus, providing heated and chilled water to the mechanical systems for each building. Each building also can operate independently of the CUP, if needed.

Denver Water Operations Complex, office space in operations buildings. Denver Water is using Haworth furniture in all office spaces. Haworth achieved Zero-Waste-to-Landfill status for their North-American and Asian-Pacific production plants in 2009 and globally in 2012. All the Haworth Products for Denver Water were made in the U.S.A., with the majority in Holland, Michigan.



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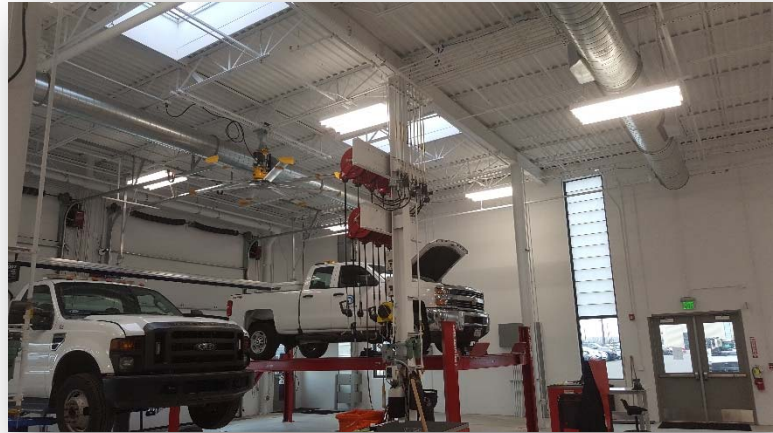
Denver Water Operations Complex, meter test bench. Meter test benches use potable water for meter testing that is recovered and reused, saving thousands of gallons of potable water per day.



Denver Water Operations Complex, radiant floor heating system in operations buildings. Radiant tubing in the concrete floors uses water from the CUP to heat and cool buildings as the primary HVAC system.

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Denver Water Operations Complex, skylights and LED lighting in the Fleet Services building.



The multistage treatment unit (MSTU tank) on the west side of the Administration Building is one component of the Wastewater Recycling System as part of the overall One Water strategy of the complex redevelopment.



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LED lighting in the Wellness Building

Raised flooring and radiant heating in the Administration Building



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