

RVK Portland Office
222 SW Columbia St
Suite 600
Portland, Oregon 97201
www.RVKInc.com

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North Dakota Office of Management and Budget

Treasury and Cash Management Study



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RVK Project Team

Jim Voytko, President Emeritus, Director of Research, Senior Consultant, Principal

Josh Kevan, CEO-Elect, Senior Consultant, Principal

Beau Burggraff, Senior Consultant, Principal

Dylan Crownover, Associate Consultant

Michael Medzegian, Investment Associate

Jessica Goodall, Senior Executive Assistant

Cortney Palmer, Senior Executive Assistant

Alexandra Goroch, Senior Administrative Assistant

Foreword

The RVK Project Team would like to thank individuals from the following organizations related to the North Dakota Office of Management and Budget Cash Management Study:

Steering Committee

- Thomas Beadle Treasurer, Office of State Treasurer
- Jace Beehler Chief of Staff, Office of the Governor
- Senator Brad Bekkedahl Appropriations Chair, Senate
- Doug Burgum Governor, Office of the Governor
- Joseph Heringer Commissioner, Department of Trust Lands
- Tammy Miller Lt. Governor, Office of the Governor
- Janilyn Murtha Executive Director, Retirement and Investment Office
- Susan Sisk Director, Office of Management and Budget
- Todd Steinwand President, Bank of North Dakota
- Karen Tyler Commissioner, Securities Department
- Rep. Don Vigesaa Appropriations Chair, House of Representatives

Additional Agency Contacts

- Kristopher Ahmann Treasurer, Bank of North Dakota
- DeAnn Ament Executive Director, ND Public Finance Agency
- Scott Anderson Chief Investment Officer, Retirement and Investment Office
- Kayla Axtman CFO, ND Housing Finance Agency
- Renae Bloms Budget Analyst, Office of Management and Budget
- Kelvin Hullet SVP & CBDO, Bank of North Dakota
- Chris Kadrmas Division Director, ND Dept. of Water Resources
- Rachel Kmetz Accounting Manager, Retirement and Investment Office
- Nicole Krivoruchka Director of Finance, Office of State Treasurer
- Lise Kruse Commissioner ND Department of Financial Institutions
- Krisi Kunz Change Mgmt. Specialist, ND Workforce Safety & Insurance
- Frank Mihail Investment Officer, Department of Trust Lands
- Donna Neumiller Accounting Manager, Office of Management and Budget
- Rob Pfenning Chief Financial Officer, Bank of North Dakota
- Ryan Skor CFO – COO, Retirement and Investment Office

Others

- Confidential Treasurer, Global Corporation 1
- Confidential Treasurer, Global Corporation 2
- William Gross Investment Analyst, Montana Board of Investment
- Kirsten Haswell Investment Officer, Montana Board of Investment
- John Lieber Director of Fixed Income, New York Common Retirement Fund
- John Romasko Director of Fixed Income, Montana Board of Investment
- Dan Villa Executive Director, Montana State Board of Investment

I. Our Mandate

RVK was tasked with researching North Dakota’s cash management system and processes. The project’s purpose is to analyze the current cash management effort in North Dakota State Government and to identify opportunities for improvement in the State’s cash and investment management practices, aligning them with industry best practices as well as addressing the specific items as outlined in the OMB Cash Management Study scope of work. Those items described in the OMB Cash Management Study scope of work and required to be addressed in our work are detailed below.

Treasury and Liquidity Management:

- At a macro level, research and identify North Dakota state government’s cash inflow and outflow activity based on its experience through current and past budget cycles.
- In concert with analyzing North Dakota state government’s cash inflow and outflow data, identify the relationship between the total resources on hand relative to the minimum amount of liquidity required for North Dakota to meet its actual and/or forecast spending obligations.
- Relatedly, determine minimum cash balance requirements for specific large funds that comprise a significant portion of the state’s resources on-hand to support a goal of minimizing unused liquid holdings at the aggregate state level.
- Identify current processes used by North Dakota state government entities (Treasury et al.,) and compare to treasury management best practices.
- Provide recommendations about where North Dakota’s cash management practices could be improved through changes to be more efficient, increase returns to the state, and optimize towards increased transparency and measurement.

Investment Management:

- Upon identifying minimum liquidity needs and assets available to support North Dakota government functions, recommend specific investment structures and strategies to aggregate funds and to maximize returns for idle on-hand cash balances.
- Outline the operational and other changes necessary to achieve a more centralized and cohesive investment function for its cash.
- Analyze and opine on current investment approaches utilized by the Bank of North Dakota in its management of the state deposits.
- Compare BND investment results relative to public benchmarks and other measures, best practices utilized in other private and public entities.
- Consider information entailing returns generated from the loan and asset portfolio as well as total economic benefits to the state under alternative cash management structures.
- Align strategy recommendations with best practices in terms of segmenting investments according to forecast liquidity needs such that cash returns can be maximized according to the respective holding period (i.e., duration) prior to distribution.

- Recommendations for each investment segment to include guidelines appropriate for each respective segmented bucket-based industry standard approaches for cash management including capital preservation -- liquidity -- being prioritized.

Other:

As addressed in the methodology section of our report, RVK, as required, engaged and interviewed several agencies and fund teams across North Dakota state government regarding current cash management practices, cash flow experiences, and their feedback regarding the observations and recommendations within this report.

II. The Structure of Our Report

This report reflects our mandate described above and is divided into seven major sections:

Project Team and Methods – The RVK professionals who conducted this research and the methods employed.

Perspectives – Details key perspectives that RVK believes are foundationally important to understand before digging into the specifics of the current structure in place and its placement relative to best practices.

Overview of Current Structure – An assessment of the current cash management system and process in place and SWOT analysis.

Peer Reviews and Observations – A review of the commonly cited practices and preferences that peers institute in their respective cash management systems.

Cash Management System Best Practices Attributes – Details the eight characteristics RVK believes are essential to a cash management system with multiple cash pools and multiple cash entry and exit points.

Analysis: Current Structure vs. Alternatives – A look at North Dakota’s structure and an alternative that the state can consider for achieving more efficiencies, better outcomes, in pursuit of a best-in-class system that works within the current limitations or within expanded approaches.

Recommendations – RVK’s recommendations for North Dakota to achieve objectives and align with best practices.

Proposed Next Steps Based on Recommendations – A summary of potential next steps consistent with recommendations.

III. Project Team and Methods

Our Project Team

This project was led by the RVK Client Support Team (CST). Project Team members are listed below, and their bios are included in the Appendix.

- **Jim Voytko** – President Emeritus, Director of Research, Senior Consultant, Principal
- **Josh Kevan** – CEO-elect, Senior Consultant, Principal
- **Beau Burggraft** – Senior Consultant, Principal
- **Dylan Crownover** – Associate Consultant
- **Michael Medzegian** – Investment Associate
- **Jessica Goodall** – Senior Executive Assistant
- **Cortney Palmer** – Senior Executive Assistant
- **Alexandra Gorocho** – Senior Administrative Assistant

Data Analysis and Modeling

Through collaboration with North Dakota entities (e.g. BND, Office of State Treasury (OST), and OMB, etc.), RVK leveraged various reports and data to gain a comprehensive understanding of the state's current cash management structure, cash flow behavior, and performance. This data enabled the creation of visual aids which effectively communicated the existing processes. RVK then employed data modeling to analyze different pooling and investment approaches. By comparing these scenarios, RVK assessed potential improvements and their impact on outcomes at a state level.

The cash flow data provided a critical foundation for modeling optimal cash balance levels. This analysis considered both near-term liquidity needs and long-term investment opportunities. The goal was to optimize direct returns for agencies and departments, aligning investments with their specific spending objectives within a best practices approach. With this information in hand, we were able to conservatively estimate prospective cash amounts that could be stratified into different risk buckets. Ultimately, this data-driven approach provided valuable insights into the state's cash flow processes. It also identified areas where benchmarking and monitoring capabilities within current tools could be enhanced. Information sources and shared reports:

- ND OST Biennial Reports
- ND OST Daily Balance and Cash Flow Reports
- ND OST Certificate of Deposit Holdings Reports
- BND Annual Reports and Records
- Custom BND Data Reports: General Account, Tax Commission Account, and Other State-Related Deposits
- Strategic Investments and Infrastructure Fund Performance Reports
- Budget Stabilization Fund and Strategic Investment and Improvements Fund Performance Reports

Statute and Legislative Research

Throughout the course of the project, RVK reviewed a number of documents shared and available from online resources relevant to the current cash management structure and processes—its depository requirements, loss guidelines, agency funding protocols, investment allowances, governance, operating protocols, reporting requirements, as well as limitations and restrictions. Documents and sources included in our research include:

- Attorney General Letters of Opinion
- North Dakota Constitution
- North Dakota Administrative Code
- North Dakota Century Code
- ND Legislative Branch Website
- Legislative Budget Process, Appropriation, and Funds
- Various Committees and Responsibilities
- 3rd Party Credit Rating Reports on North Dakota
- BND Charter

Stakeholder Interviews

To gain a comprehensive understanding of the current cash management system and its stakeholders, RVK conducted in-depth interviews from February to April 2024. We interviewed key personnel from eleven agencies and departments critical to the system's operation. These included representatives from the following:

- Personnel of the ND Office of State Treasurer
- Personnel of the ND Office of Management and Budget
- Personnel of the Public Finance Authority
- Personnel of the Housing Finance Agency
- Personnel of the ND Retirement and Income Office
- Personnel of the ND Department of Financial Institutions
- Personnel of the North Dakota Securities Department
- Personnel of the Department of Water Resources
- Personnel of the Bank of North Dakota
- Personnel of the ND Tax Department
- Personnel of the ND Department of Trust Lands

The interviews followed a one-on-one or small group format, depending on the stakeholder group. This allowed for focused discussions about each entity's role within the system, its interaction with the key players, and the benefits (or lack thereof) it draws from the current process. We explored topics such as:

- **Current responsibilities** – How each stakeholder is involved in managing, monitoring, reporting, or using the existing cash management system.
- **System strengths and weaknesses** – Stakeholder perspectives on the effectiveness of the current framework.
- **Alternative structures** – Stakeholder insights on potential improvements to the overall cash management structure.

Specific discussion points included:

- **Organizational structure** – Placement of cash management functions within the government framework and biennial budget process.
- **Cash flow process** – The flow of cash from tax receipt to disbursement agency/fund for spending.
- **Investment decision-making** – The structure, process, and hierarchy for making investment decisions.
- **Delegation of responsibilities** – How treasury and investment management responsibilities are delegated.
- **Governance involvement** – The role of elected officials in system governance and potential alternative structures.
- **Staffing and capabilities** – Treasury office staffing levels and oversight/reporting functionalities.

Beyond the initial interviews with the stakeholder groups, RVK engaged in numerous follow-up calls to clarify details.

Peer Interviews

To gain valuable insights from organizations facing similar cash management challenges, RVK conducted peer interviews from February to April 2024. Our peer selection process focused on entities with complex cash flows and cash management structures involving multiple cash generation and spending entities and diverse cash flow demands – mirroring this project's scope. We targeted key individuals with deep knowledge of these systems.

The interviews included individual discussions and group sessions with treasury and investment professionals at two Fortune Global 500 corporations, the State of Montana, and New York Common Retirement Fund. These conversations helped us gain a comprehensive understanding of:

- **Organizational Structure** – How each entity is structured to manage cash flow effectively.
- **Treasury & Investment Responsibilities** – The specific roles and functions within their treasury and investment teams.
- **Cash Management Needs** – Their short- and long-term liquidity objectives.
- **Technology & Staffing** – The technology and personnel resources utilized for cash management.
- **Investment Strategies** – Their approaches to balancing liquidity and return.
- **Risk Management** – The key risks they identify and mitigate within their cash management systems.
- **Process Optimization** – Their processes for interacting with underlying entities (e.g., departments).

By delving into these details and leveraging RVK's existing experience, we gained valuable insights that will shape the development of a best-in-class cash management platform for the project.

IV. Perspectives

The following perspectives provide important background and insights that RVK believes to be highly relevant to the task of evaluating the current cash management practices.

Perspective #1 –

The dynamic that exists in North Dakota with a State Owned Bank is unique. With no other such entities in the United States, direct peer comparisons are not readily available. Additionally, the marriage of the Bank of North Dakota and its banking mission with the State’s cash management effort across its more than 200 funds is also highly unique and appears to have evolved incrementally over time to the dynamic currently in place.

A review of the founding legislation that created the BND, “The Bank of North Dakota Act,” does not appear to indicate an original legislative intent for the marriage of the banking mission with the cash management needs of the State.

Section 1 of the Act states (emphasis ours):

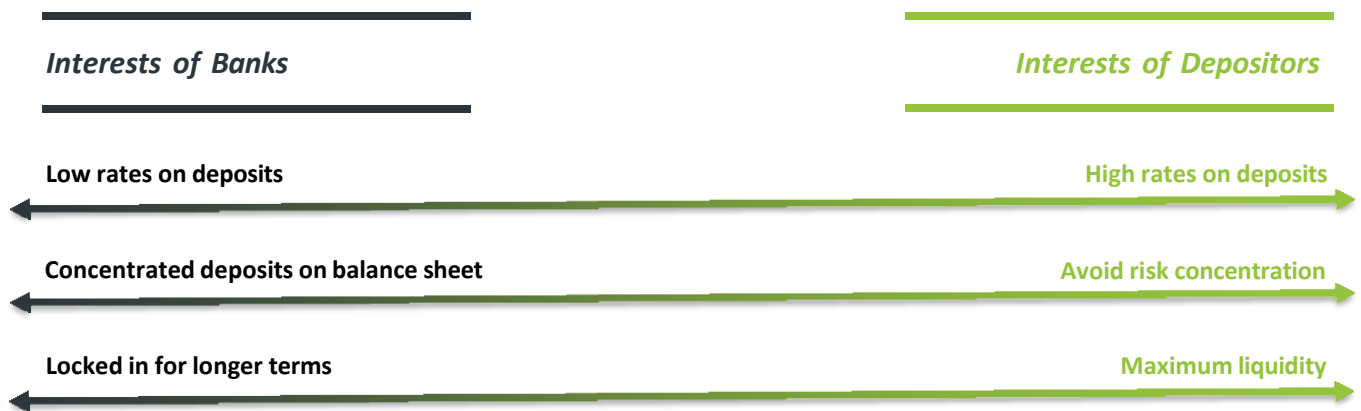
*For the **purpose of encouraging and promoting agriculture, commerce and industry**, the State of North Dakota shall engage in the business of banking, and for that purpose shall, and does hereby, establish a system of banking owned, controlled and operated by it, under the name of the Bank of North Dakota.*

Perspective #2 –

There is a natural tension that exists between depositors of cash at financial institutions and the financial institutions themselves, as they have directly competing interests. This dynamic is not unique to the Bank of North Dakota and is a fundamental element embedded in the nature of banking.

Depositors desire the best combination of the following factors that can be achieved for their cash holdings: safety, liquidity, and investment returns. In pursuing these core objectives, depositors value optionality – that is the ability to choose, at any given point in time, the institution that offers them the best opportunity to achieve them.

The financial institutions that hold deposits desire exactly the opposite: to pay the lowest rate possible, on the largest deposit amounts possible, and to hold on to them for as long as possible with as much certainty as possible. A core business of banking is to take in deposits and loan them to borrowers. Profits are boosted by maximizing the spread between the rates paid to depositors and rates charged to borrowers. Larger balances that can be loaned for longer periods of time enhances this dynamic.



Perspective #3 –

Optimization of the State’s cash management system likely means something different to different stakeholders. From the perspective of the State’s general fund, other reserves, and constituent agencies, optimal cash management structures will be those that optimize for the “interests of depositors,” while the BND’s operating profits will be optimized if the structure skews to the “interests of banks.”

Because the State of North Dakota owns the Bank of North Dakota, optimization could also be the solution that provides the greatest net benefit to the State as a whole. In this study, we intend to analyze both the “results as a whole” as well as the “results from the perspective of the depositors.” We believe the latter is an important perspective to consider in the event that the forced linkage between the banking mission and the cash management needs of the State and its agencies is altered or reconsidered in any way.

Perspective #4 –

The current union of the State’s cash management efforts and funding of the BND balance sheet creates significant difficulties for the State to measure the performance for either activity. The coupling of the two competing missions creates a lack of transparency – a transparency which can only be achieved if they were segregated. The bank’s net income can be measured, but is artificially inflated from the benefit of low cost deposits from a large captive client. Put differently, underlying client agencies are subsidizing the bank’s income through receipt of lower returns on their cash and reserves. If this is the arrangement that optimizes for the entire State, that may appropriately be considered the best solution; however it does lead to tension among the various stakeholders and lacks the clear transparency necessary to assess the actual performance of the underlying agencies and the BND itself. The potential loss of investment earnings on the aggregate cash position across the State is lost within the opaque linkage of these two missions.

Perspective #5 –

A separation, in full or in part, of the marriage between the State’s cash management efforts and funding of the BND balance sheet, does not imply in any way that the funding of the BND balance sheet is not a worthwhile endeavor for the State.

Perspective #6 –

There are significant operational and cost efficiencies associated with consolidated investment of cash reserves. Investment of cash – more so than almost any other financial asset – offers economies based on scale. If managed externally, large mandates tend to benefit from the lowest fees possible.

V. Overview of Current Structure

Aggregate System

The framework of cash management in the state of North Dakota is dictated by statute, with the systems focal relationship between the Office of the State Treasurer and the Bank of North Dakota established primarily by the following three statutes:

“NDCC 54-11-01. Duties and powers of state treasurer.

The state treasurer:

1. *Shall receive and safely keep all public moneys which must be deposited into the state treasury and pay out the same as directed by law.*
- .
- .
- .
16. *Unless otherwise specified by law, shall credit all income earned on the deposit or investment of all state moneys to the state’s general fund. This subsection does not apply to:*
 - a. *Income earned on state moneys that are deposited or invested to the credit of the industrial commission or any agency, utility, industry, enterprise, or business project operated, managed, controlled, or governed by the industrial commission.*
 - b. *Income earned by the Bank of North Dakota for its own account on state moneys that are deposited in or invested with the Bank.*
 - c. *Income earned on college and university funds not deposited in the state treasury.”*

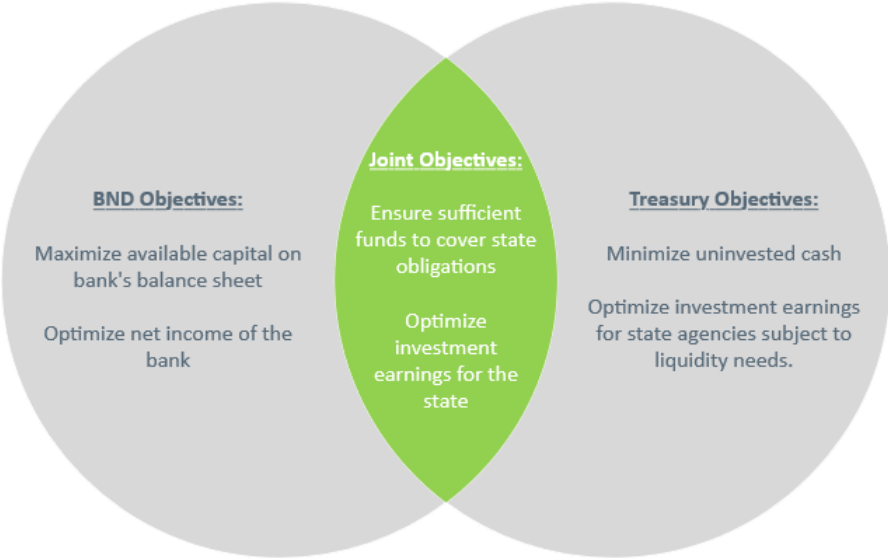
“N.D.C.C. § 21-04-02. State funds to be deposited in Bank of North Dakota.

Public funds belonging to or in the custody of the state must be deposited in the Bank of North Dakota.

“N.D.C.C. § 6-09-07. State funds must be deposited in Bank of North Dakota – Income of the Bank.

All state funds and funds of all state penal, educational, and industrial institutions must be deposited in the Bank of North Dakota by the persons having control of such funds or must be deposited in accordance with constitutional and statutory provisions. All income earned by the Bank for its own account on state moneys that are deposited or invested with the Bank to the credit of the state must be credited to and become a part of the revenues and income of the Bank.”

The statutes require that all public moneys that must be deposited into the state treasury must be deposited by the Treasurer in the Bank of North Dakota. The state treasurer is expected to credit all interest earned on state moneys to the general fund, with exceptions for funds under the industrial commission or belonging to college and university funds not deposited in the state treasury. Any income earned by the BND for its own account from state deposits are to be retained as revenues and income of the Bank. The state legislature, under advisement of the industrial commission, may make transfers from the capital of the BND to the general fund through appropriations. This relationship, while established with consistent objectives between the Bank and the state agencies in ensuring sufficient funds to cover obligations and to provide investment earnings for the state, creates natural frictions for all parties as their independent goals of optimizing income for their respective assets comes in direct conflict.



The state, through the management of the state treasurer’s office, has the objective to optimize their investment earnings, subject to the necessary liquidity needs to ensure obligations are met. This requires the treasurer to minimize uninvested cash and to achieve the highest rate of return subject to liquidity and investment risk considerations. Because the Treasurer is required to retain custody of all state moneys at the Bank of North Dakota, investment opportunities are limited to the offerings and rates of the bank. Agricultural Commodity Assessment Funds are an exception because they can utilize the BidND program, a marketplace maintained by the treasurer of CD rates offered by banks and credit unions in the state of North Dakota.

The Bank, however, seeks to optimize the net income of the bank – the revenues of loan and investment income net the operational expenses and interest payments to depositors of the bank. At the same total income, higher investment earnings for Bank deposits, would result in lower net income and available long-term capital for the Bank. While investment income returned to the bank depositors is retained within the banks deposit base, this reallocation from bank assets to liabilities influences the banks’ reserve ratio needs and reduces the bank’s earnable asset base.

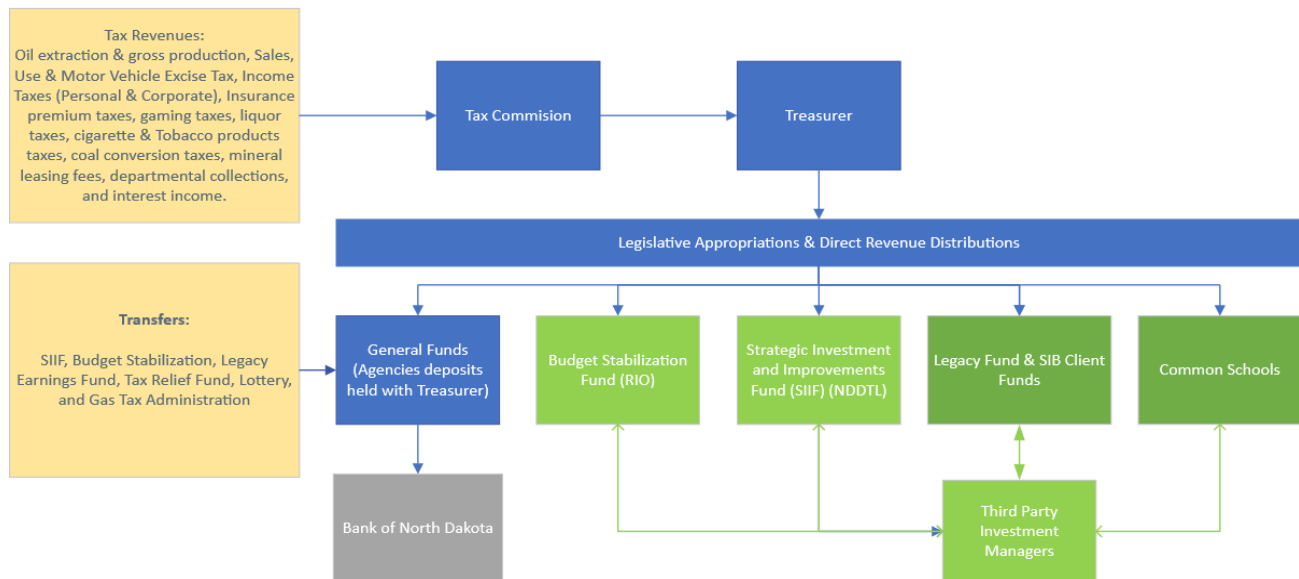
To ensure an alignment of interests, there exists the following statute:

“N.D.C.C. § 21-04-18. Interest or dividend rates.
Depositories of public funds in this state shall pay substantially the same rate of interest or dividend thereon as such financial institutions pay upon individual deposits.”

“Financial institutions” is defined in NDCC Chapter 21-04 to include “state and national banks insured by the federal deposit insurance corporation, state-chartered or federally chartered savings and loans insured by the federal savings and loan insurance corporation, and state-chartered or federally chartered credit unions insured by the national credit union administration.”

Office of the State Treasurer

The current structure of the State of North Dakota’s Treasury management system, as a function of cash flow operations and investment management, is primarily aggregated within the Office of the State Treasurer. The majority of North Dakota’s short-term cash assets resides within the Treasurer’s purview with funds in its custody and invested at the BND by legislative mandate. There are, however, investment pools within the State that allow for allocations to competitively select third-party investment management firms as determined by the professional investment staff at the Retirement Investment Office (RIO) and the Department of Trust Lands (NDDTL). These funds include long-term investments of the Legacy Fund and the Common Schools Trust Fund, as well as cash reserve funds, such as the short to intermediate-term investments of the Budget Stabilization Fund (BSF) and Strategic Investments and Improvements Fund (SIIF).



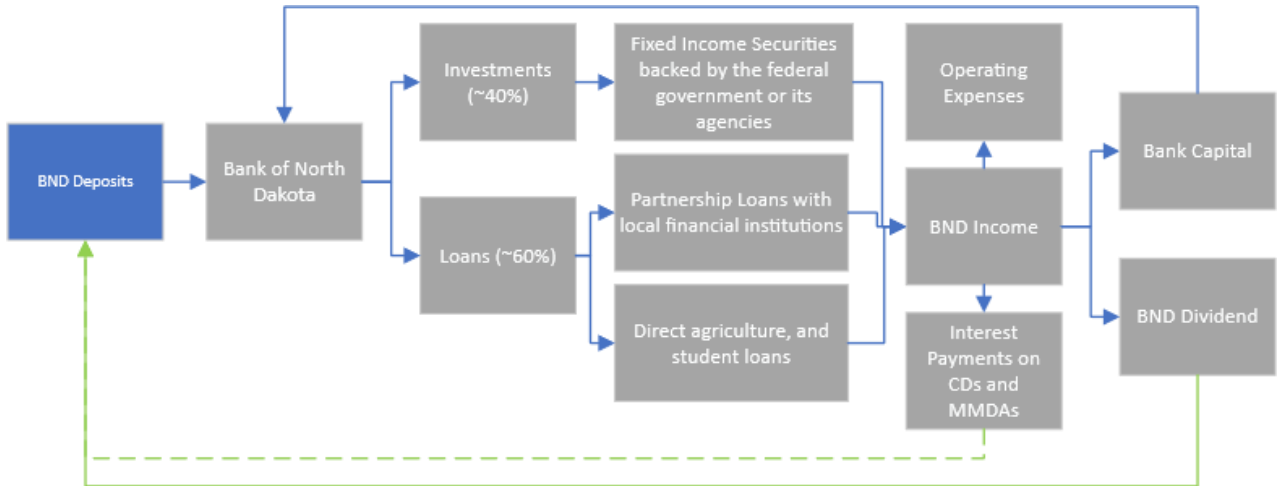
From the perspective of cash flow management, what we refer to in this report as “the treasury function,” the Treasurer’s office currently works closely with the Tax Commission and the Office of Management and Budget to process the disbursement of all tax revenues, legislative appropriations, and fund transfers to the appropriate agencies and/or investment funds. Existing aggregation of cash currently is executed within the Treasurer’s office with more than 260 funds held as sub-accounts to the Treasurer’s master account at the Bank of North Dakota. The Treasurer’s office, with assistance from the Office of Management and Budget, is responsible for all sub-accounting for these 260+ agencies to properly account for all movements of cash, inclusive of any interest received where allowable, and each fund’s corresponding daily balance.

The Treasurer’s office, as the party responsible for the prudent management of state moneys, seeks to generate as much return on deposits as possible, subject to liquidity and risk considerations. In order to effectively invest the state’s deposits, and generate returns above the interest of invested cash held in a money market deposit account (MMDA), the Treasurer’s office must be able to forecast both incoming cash flows as well as the cash

needs of the underlying agencies to ensure the availability of sufficient cash on hand to cover the states obligations. Cash flow forecasting is currently conducted at the aggregate level by the Treasurer’s office based largely on historical trends and does not include any consistent, ongoing, bottom-up forecasting done across all the underlying agencies. The Treasurer’s office is responsible for all investment decisions for all of the state’s general and special funds, as well as several trust funds and agricultural commodity funds. The Treasurer invests state funds in CDs with the Bank of North Dakota, while agricultural commodity fund money is invested in banks and credit unions throughout the state. All cash not invested in CDs is held with the Bank of North Dakota in an interest bearing MMDA.

Bank of North Dakota

The Bank of North Dakota stands at the center of the state’s cash management operations as the bank of deposit for all state funds, unless stated otherwise in North Dakota Century Code. In addition to state funds held with the Treasurer, the bank also has deposits from corporate accounts, city and county governments in North Dakota, North Dakota financial institutions, and state funds disbursed for agency spending and no longer held with the Treasurer. The Bank returns to depositors’ interest on deposits as well as any interest earned on investments in CDs. In turn, the Bank utilizes its deposits and bank capital to generate income through investments and loan offerings. Over the last 10 years the bank has maintained an average split of 65% of earnable assets allocated to loan offerings, with the remaining 35% invested in various high quality fixed income securities issued and/or backed by the federal government or agencies of the federal government. The income derived from loans and investments is then netted down by the Bank’s operating expenses and any interest owed to depositors. The resulting net income is then retained by the bank, subject to any appropriations by legislature as advised by the industrial commission.



The loans made by the Bank of North Dakota are intended to support the economic development of the state. Direct student loans and some agricultural loans are made by the bank in addition to agriculture, business, and residential real estate partnership loans the bank makes alongside other financial institutions in the state, i.e., “partnership loans.” Partnership loans allow for local banks and credit unions to engage in larger loans with the backing of the Bank of North Dakota. The local financial institution, on behalf of a prospective borrower, will apply to participate in one of the loan programs offered by the Bank of North Dakota. Upon approval the loan will receive funding split between the sourcing financial institution that administers the loan and the Bank of North Dakota.

In addition to the loans the Bank of North Dakota directly makes directly or participants in, the bank also administers several loan programs for which the State Legislature appropriates funds. Of these programs, there are two of particular relevance to this study: the Board of University and School Lands permanent fund loan pool enable first mortgage farm loans and the Legacy Fund revolving infrastructure loan fund. Additionally, the Legacy Fund is mandated by statute to provide a pool of assets to be utilized in a CD match program by the Bank of North Dakota to fund in-state loans. Both loan programs and the CD Match program are derived from assets that would otherwise be under no obligation to be deposited with the Bank of North Dakota. These programs are directed by legislature as a means of stimulating the state economy through access to capital. The relevant statutes are detailed below:

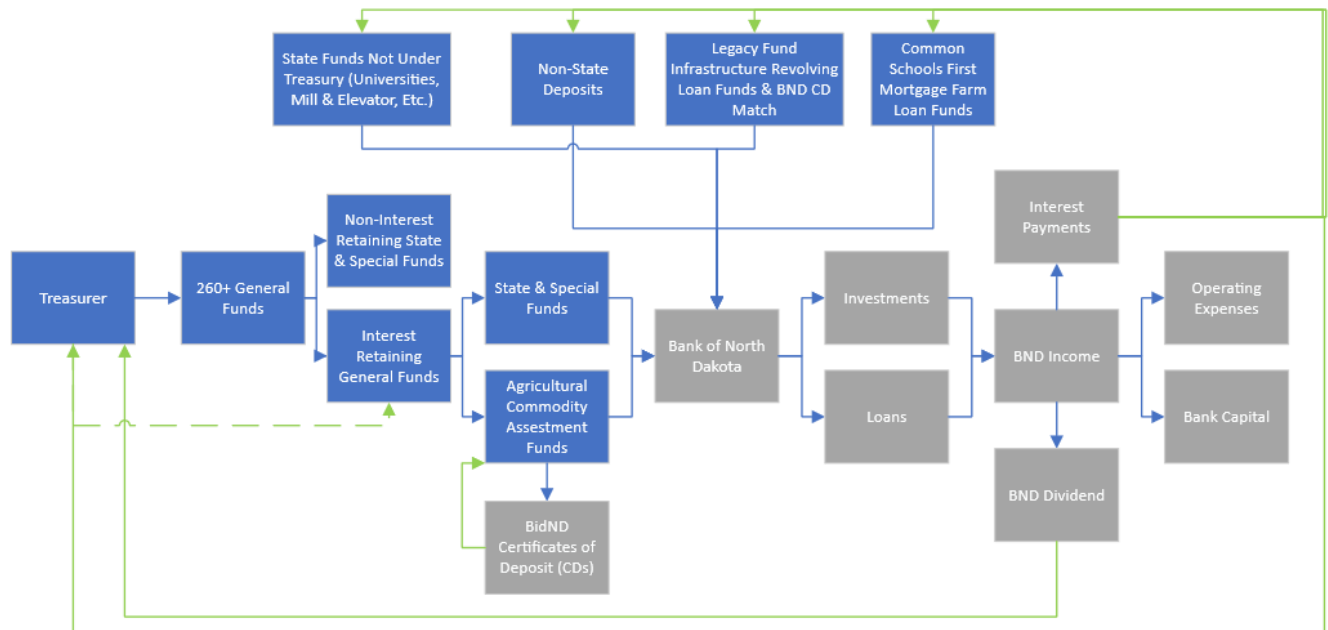
“N.D.C.C. § 15-03-04.1. Loan Pool Account.

There is hereby created in the Bank of North Dakota a loan pool account. The board of university and school lands may purchase first mortgage farm loans made in accordance with this chapter from the Bank of North Dakota. All purchased farm loans must be managed and serviced by the Bank of North Dakota. The loans must be credited to the loan pool account and the investments, repayments, interest, and income must be credited to the various land departments trust funds in the proportion that each participates therein.[...]”

“N.D.C.C. § 20-10-11. Legacy and budget stabilization fund advisory board.

[...]

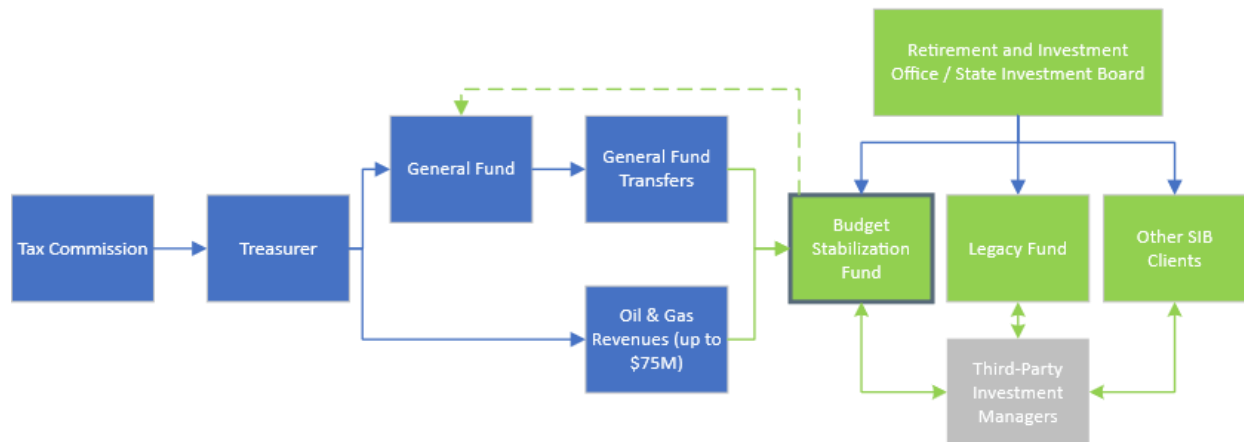
- 2. The goal of investment for the Legacy Fund is principal preservation and growth while maximizing total return for an appropriate level of risk and to provide a direct benefit to the state by investing a portion of the principal in the state. Preference must be given to qualified investment firms and financial institutions with a presence in the state for investment of the Legacy Fund.*
- 3. The board shall determine the asset allocation for the investment of the principal of the Legacy Fund including:
 - a. A target allocation of seven hundred million dollars to fixed income investments within the state, including:
 - (1) Up to one hundred fifty million dollars for infrastructure loans to political subdivisions under section 6-09-49.1. The net return to the Legacy Fund under this paragraph must be fixed at a target rate of one and one-half percent;*
 - (2) A minimum of four hundred million dollars for the Bank of North Dakota’s certificate of deposit match program with an interest rate fixed at the equivalent yield of United States treasury bonds having the same term, up to a maximum term of twenty years;***



Outside of the cash management functions of the Bank of North Dakota and the Treasurer’s Office, there are four primary funds that are able to invest state revenues with a longer time horizon: the BSF, SIIF, the North Dakota Legacy Fund and associated State Investment Board client funds, and the Common Schools Trust and associated School and Trust Lands permanent funds.

Budget Stabilization Fund (BSF)

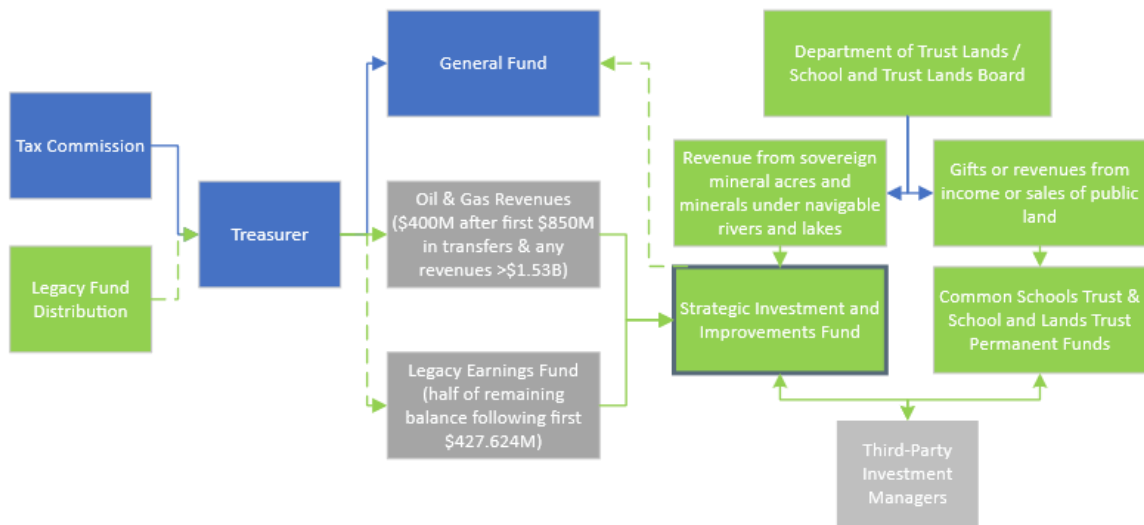
The Budget Stabilization Fund is established by **N.D.C.C. § 54-27.2** and serves as a reserve fund to the general fund managed by the State Investment Board for use in the case of offsetting revenue shortfalls. Funds are received by transfers from the general fund and a portion of the state’s share of oil and gas extraction and production taxes of an amount up to \$75 million as defined in **N.D.C.C § 57-51.1-07.5**. Transfers from the Budget Stabilization Fund to the general fund as detailed in **N.D.C.C. § 54-27.2-01**. consist of “[a]ny amounts provided by law for deposit in the fund and any interest or earnings of the fund which would bring the balance in the fund at the end of any fiscal year to an amount greater than fifteen percent of the current biennial state general fund budget, as finally approved by the most recently adjourned special or regular session of the legislative assembly.” Additional transfers can be approved by the governor subject to the stipulations of **N.D.C.C. § 54-27.2-03**.



The BSF is conservatively invested by the State Investment Board with third party managers. The fund utilizes two short duration bond investment managers benchmarked against the Bloomberg 1-3 year US Government/Credit Index and a government money market fund for liquidity needs. As of December 31, 2023, the BSF had a balance of just over \$950 million.

Strategic Investment and Improvements Fund (SIIF)

The Strategic Investment and Improvements Fund is established by **N.D.C.C. § 15-08.1-08** and serves as an additional reserve fund for legislative spending on *“one-time expenditures relating to improving state infrastructure or for initiatives to improve the efficiency and effectiveness of state government.”* Funds are received from *“income derived from the sale, lease, and management of the mineral interests acquired by the board of university and school lands [...] after deducting the expenses of sale, lease, and management of the property”* as well as distributions from oil and gas revenues and the Legacy Earnings Fund. The oil and gas revenues SIIF receives are defined in **N.D.C.C § 57-51.1-07.5**, with the fund entitled to up to \$400 million of the state’s share of revenues after up to \$815 million in distributions to other funds in the state, as well as any revenues in excess of up to \$1.53 billion. Distributions from the ND Legacy Earnings Fund are defined in **N.D.C.C § 21-10-13** with half of any earnings distributions from the Legacy Fund in excess of \$427.624 million transferred to SIIF.



Similar to the Budget Stabilization Fund, SIIF is invested conservatively by the Department of Trust Lands utilizing a single third party investment manager. The investment fund is a short duration bond fund benchmarked against a custom benchmark composed of 50% Bloomberg US Government/Credit 1-3 Year Bond Index and 50% ICE BofaML 3 Month Treasury-Bill Index. As of December 31, 2023, the Strategic Investment and Improvements Fund had a balance of just over \$900 million.

Legacy Fund

The Legacy Fund as established by **Article X Section 26** of the North Dakota Constitution is funded by “[t]hirty percent of total revenue derived from taxes on oil and gas production or extraction,” and is invested by the state investment board. As defined in **N.D.C.C § 21-10-11** the goal of the investment of the fund is “principal preservation and growth while maximizing the total return for an appropriate level of risk and to provide a direct benefit to the state by investing a portion of the principal in the state.” Subsection 3 of the statute further details the requirements for the in-state investments of the fund as stated below:

“N.D.C.C. § 21-10-11 Legacy and Budget Stabilization Fund advisory board.

[...]

3. The board shall determine the asset allocation for the investment of the principal of the Legacy Fund including:
 - a. A target allocation of seven hundred million dollars to fixed income investments within the state, including:
 - (1) Up to one hundred fifty million dollars for infrastructure loans to political subdivisions under section 6-09-49.1. The net return to the Legacy Fund under this paragraph must be fixed at a target rate of one and one-half percent;
 - (2) A minimum of four hundred million dollars for the Bank of North Dakota’s certificate of deposit match program with an interest rate fixed at the equivalent yield of United States treasury bonds having the same term, up to a maximum of twenty years; and
 - (3) Other qualified fixed income investments within the state based on guidelines developed by the Legacy and Budget Stabilization Fund advisory board.
 - b. A target allocation of six hundred million dollars to equity investments in the state, including:

- (1) *Investments in one or more equity funds, venture capital fund, or alternative investment funds with a primary strategy of investing in emerging or expanding companies in the state. Equity investments under this paragraph must:*
 - (a) *Be managed by qualified investment firms, financial institutions, or equity funds which have a strategy to invest in qualified companies operating or seeking to operate in the state and which have a direct connection to the state; and*
 - (b) *Have a benchmark investment return equal to the five-year average net return for the Legacy Fund, excluding in-state investments; and*
- (2) *Other eligible investments under this subdivision based on guidelines developed by the Legacy and Budget Stabilization Fund advisory board.”*

Consistent with the guiding statutes, the state investment board invests the oil and gas revenues received for the benefit of future generations, preserving the purchasing power of the fund and maximizing the total return at prudent risk levels. The fund is invested with a long-term horizon in a multi-asset structure inclusive of public equities both in the US and international markets, private equity, public fixed income, private real assets, and the aforementioned in-state investment programs. As of December 31, 2023, the Legacy Fund had an asset balance of just under \$9 billion.

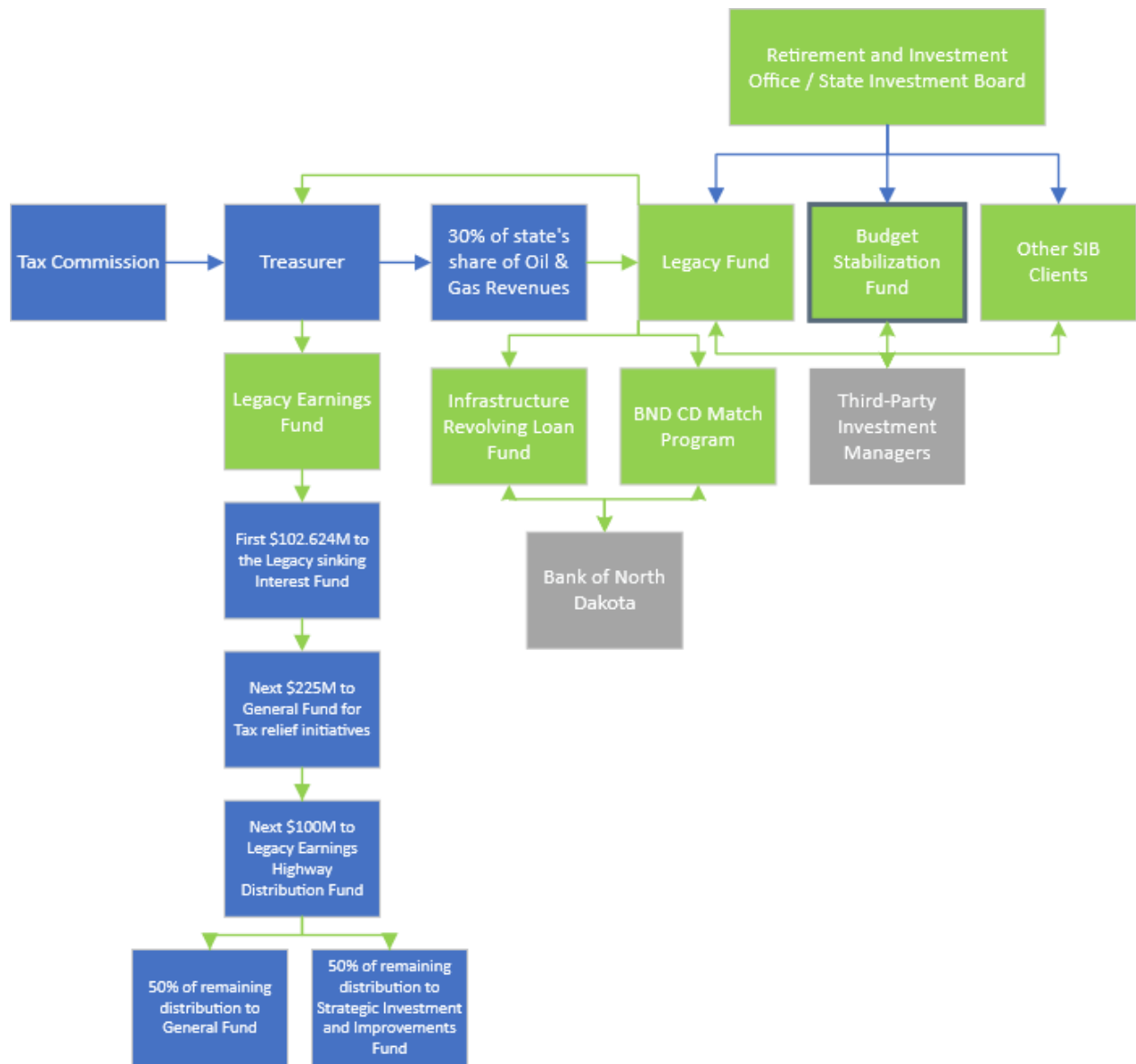
At the end of each biennium, the earnings of the ND Legacy Fund are transferred by the state treasurer to the Legacy Earnings Fund. **N.D.C.C § 21-10-12** defines earnings as “*an amount equal to seven percent of the five-year average value of the Legacy Fund assets.*” The ND Legacy Earnings Fund balance is transferred according to the following statute:

“N.D.C.C. § 21-10-13 Legacy Earnings Fund – State treasurer – Transfers.

[...]

4. *On July first of each odd-numbered year, from the amount available for appropriation or transfer from the Legacy Earnings Fund for the biennium, the state treasurer shall transfer funding in the following order:*
 - a. *The first one hundred two million six hundred twenty-four thousand dollars or an amount equal to the amount appropriated from the legacy sinking and interest fund for debt service payments for a biennium, whichever is less, to the legacy sinking and interest fund under section 6-09.4-10.1*
 - b. *The next two hundred twenty-five million dollars to the general fund to provide support for tax relief initiatives approved by the legislative assembly.*
 - c. *The next one hundred million dollars to the legacy earning highway distribution fund for allocations under section 54-27-19.3.*
 - d. *Any remaining amounts under this subsection as follows:*
 - (1) *Fifty percent to the general fund.*
 - (2) *The remaining fifty percent to the strategic investment and improvements fund to be used in accordance with the provisions of section 15-08.1-08.”*

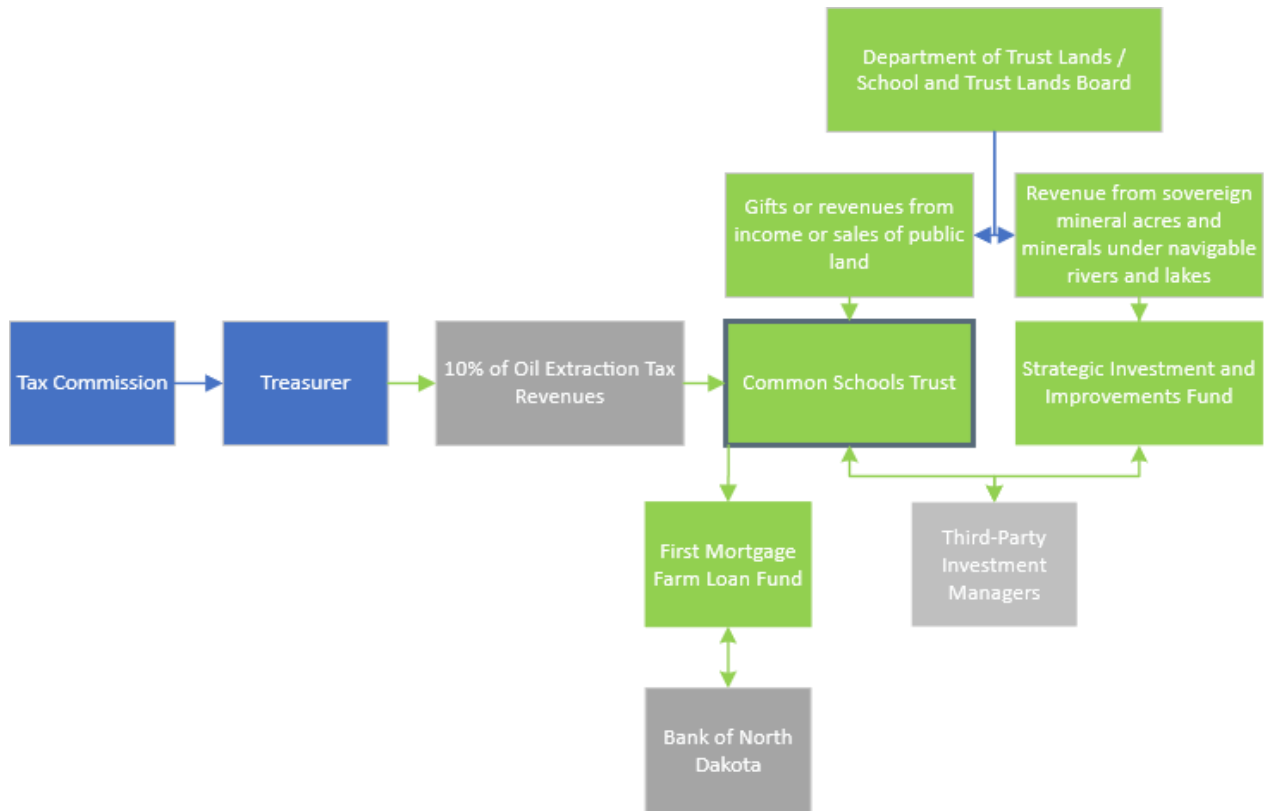
Though the investment and cash management of the Legacy Fund is not under the direct purview of the state treasurer, the Legacy Earnings Fund and its transfers are, in addition to the half of any earnings in excess of the transfers detailed in **N.D.C.C § 21-10-13** subsection 4a. through 4c. that are retained by the general fund.

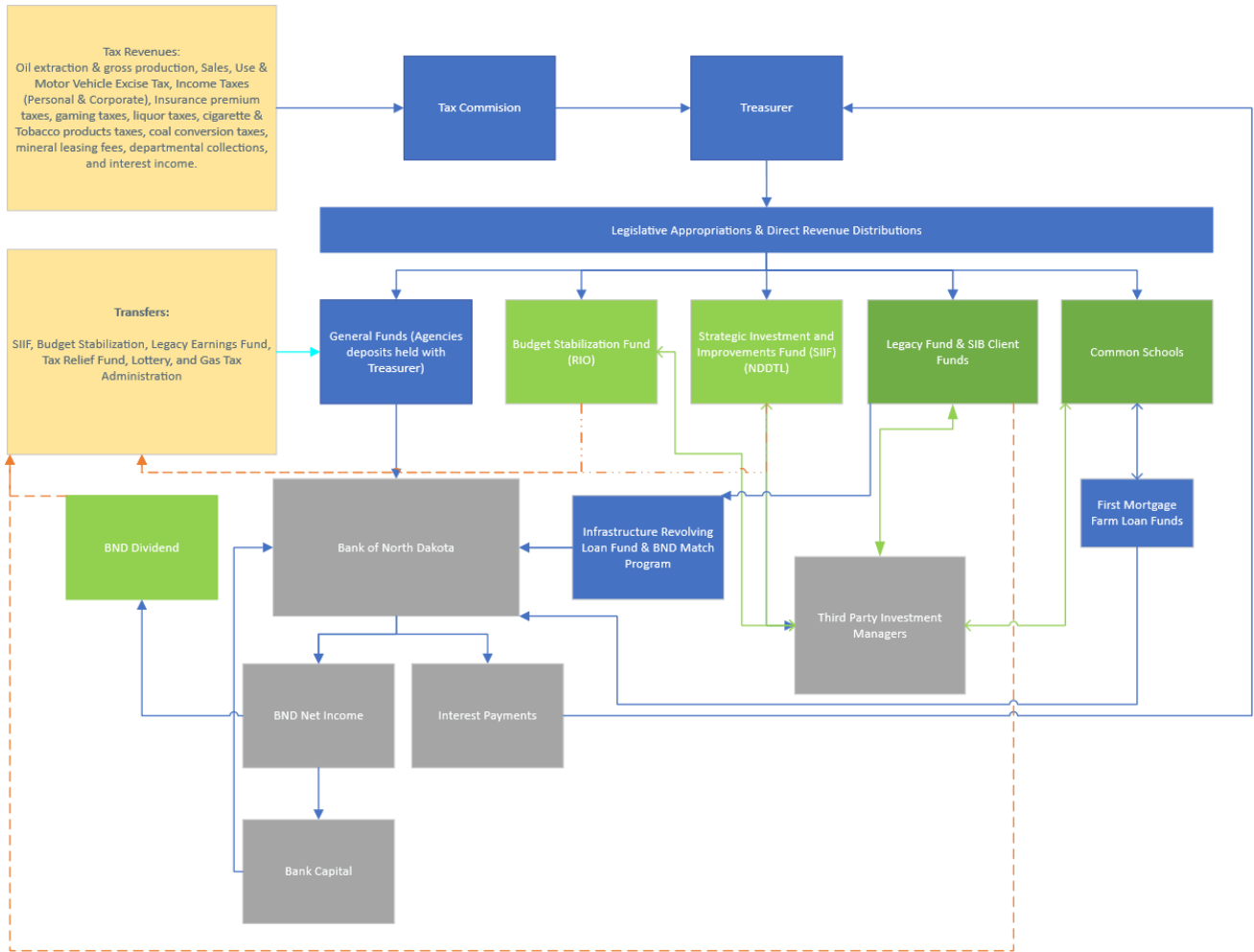


Common Schools Trust Fund

The Common Schools Trust Fund was established by **Article IX Section 1** of the North Dakota Constitution with the source of funding defined as “[a]ll proceeds of the public lands that have been, or may be granted by the United States on the sale of public lands; the proceeds of property that fall to the state by escheat; all gifts, donations, or the proceeds thereof that come to the state for support of the common schools, or not otherwise appropriated by the terms of the gift, and all other property otherwise acquired from common schools, must be and remain a perpetual trust fund for the maintenance of the common schools of the state.” In addition, consistent with **N.D.C.C. § 57-51.1-07** ten percent of oil extraction taxes are also contributed to the Common Schools Trust Fund

In accordance with **Article IX Section 2** of the North Dakota Constitution, “[d]istributions from the Common Schools Trust Fund, together with the net proceeds of all fines for violation of state laws and all other sums which may be added by law, must be faithfully used and applied each year for the benefit of the common schools of the state and no part of the fund must ever be diverted, even temporarily, from this purpose or used for any purpose other than the maintenance of common schools as provided by law.”





VI. Peer Reviews and Observations

Peer reviews in the context of this analysis are focused on the organizational structures and linkages between Treasury and Investment Management. Peers were selected based on RVK's knowledge and view of their functional capabilities implementing an institutional quality treasury and cash management system. Although it is often desirable to compare performance results, we caution against using performance results of peers in this analysis. Each organization's investment returns will be highly dependent on their unique cash flows and balance sheet strength making a direct comparison of performance results inappropriate in our view.

State of New York:

Organizational Structure and Cash Management Structure

The entity that manages New York state operating cash is the New York State Comptroller's Office, specifically the Bureau of State Accounting Operations (BSAO) within it.

The BSAO has a dedicated Cash Management Unit (CMU) that is responsible for the day-to-day operations of state cash and serves the top-of-house function providing daily forecasting and facilitating cash flow activity between the Investment Management Bureau (IMB) and various state agencies. Included in their daily responsibilities are tasks such as:

- Managing bank accounts
- Processing deposits and payments
- Investing surplus funds according to state law

The Comptroller's Office oversees cash management, but the investment of the state's operating cash is the responsibility of the NYSCRF IMB. The Bureau also invests the cash allocation of the New York State Common Retirement Fund, but this is a separate pool of money for retirement purposes relied upon for ongoing benefit payments.

All state agencies leverage the BSAO in terms understanding the process and what is required of their participation to ensure they optimize their investment decisions relative to their cash flow needs. The BSAO and Investment Management Bureau are able to utilize some of the reporting and accounting functions of the custody bank to augment cash management and investment management functions.

Investment Management Process and Structure

Leadership of the New York Investment Management Bureau tied specifically to cash investment is the responsibility of John Lieber and his team to focus on management of the fixed income and cash assets of the NYCRF and state's general operating cash. Their job is to invest cash assets for the various agencies which rely upon these funds for their respective appropriated spending needs. The IMB receives a daily report on expected cash inflows and outflows, and this allows them to appropriately invest assets from an aggregated perspective.

The IMB's fixed income and cash investment department alone has 11 full-time employees where the cash investment function requires the equivalent of two full-time employees with others overlapping capabilities to cover for vacation and other reasons. The employee count is based on a formal policy and is scaled according to

the percentage of assets under their management.

NYCRF's approach to cash investment management is very conservative. They have the ability to invest out to one-year in maturity, however, they rarely do. They focus their efforts on investing 30-days and shorter and specifically have most assets invested overnight and one-week or less in maturity. The primary focus for their team is liquidity and being able to support the hundreds of agencies and their respective needs without the risk of incurring losses on prematurely liquidated holdings. They are intentionally more conservative from a duration perspective to accommodate any unforeseen cash outflow needs as well as to reduce the risk of loss of state funds. The exception occurs when a large cash outflow is known; in these instances, the IMB will lock in a longer-term maturity specific for such an event. Due to IMB's short-term focus and lack of long-term or reserve cash funds under its purview, they do not subscribe to a tiered investment approach.

The communication that flows upward from the hundreds of agencies is vital for managing the duration of the portfolio relative to the ongoing cash inflow and outflows. Agencies receive their respective share of what is earned on the totality of cash assets. Individual agencies do not have the ability to direct investments instead relying upon the expertise of the professional investment staff to manage the cash assets.

The approximate amount of the state's operating cash pool today is \$75 billion whereas the pension specific cash amounts is \$25 billion. This includes all of the state's operating cash. IMB is comprised of highly experienced investment professionals who use both internal and external investment management firms to manage the assets.

Mr. Lieber noted that now that interest rates are higher and pay a meaningful yield, he has had domestic agencies inquire or pressure his group to seek out a higher rate of return. As indicated by other peers surveyed, this approach is common across cash management platforms for purposes of efficiency and equitability.

Global Corporation #1

Organizational and Cash Management Structure

Global Corporation 1 is a Fortune Global 500 public corporation with multi-division cash management responsibilities. Cash management and assets are managed and consolidated at the top of the organization. The cash account structure does include some orphaned or standalone accounts due to business units' regulatory or domicile-based restrictions. The company uses public debt for financing and Treasury is responsible for managing the debt pool and debt investor base. Counter party and concentration risk is unavoidable given the size of the company and its assets, but by using only large, bulge bracket banks, the company helps to manage the concentration risk.

Business units contained within the organization are required to use an annual formal planning process that enables them to create a top-of-house liquidity budget for the calendar year. Cash forecasting and budgeting inputs given to Treasury are the responsibility of these business units and entities. They utilize this information along with a historical perspective of their operating budget to map out expected liquidity needs for a given year. Underlying business units rely upon the treasury function to provide respective investment returns. Returns are generated the top-of-house such that all underlying business units receive that same return as what is generated on the aggregate pool.

The treasury group is comprised of 12 to 16 people who support the treasury function and approximately 10

individuals tasked with capital markets and investment management related functions. There are about 90 people who provide additional middle office support, in addition to specialty groups that total well over 200 individuals. Treasury is responsible for managing and consolidating a wide range of accounts from a vast number of underlying business units. Scaling cash management holistically is a challenge due to the size of the organization and the global spread of business units and revenue flow across different domiciles. They currently use a treasury management system (TMS) software, Kyriba, but it is necessary to use a number of workarounds for pieces that are not integrated due to cash repatriation limitations. The interviewee noted several other systems exist in the space that could potentially fit as well for what they want to accomplish: Treasura, Wall Street Suite, and Quantam. There was no indication of an imminent change to their current TMS provider, but it is a technology that is used to aid in what we consider to be a highly complex cash management process.

Investment Management Process and Structure

Treasury stratifies cash available for investment based on the following:

- **Layer 1** – Bank cash, minimized to the extent possible
- **Layer 2** – Money market funds
- **Layer 3** – Internally managed holdings that include highly liquid commercial paper and U.S. Treasury Notes usually within a 1-year maturity limit. Investment guidelines dictate what staff can trade and deemphasizes credit risk. They use various third-party trading platforms to assist with this function including Bloomberg, Bidnet, etc., in addition to their custodian bank’s money market trading platform.
- **Layer 4** – Medium term investment exposure; investment management function is outsourced to large institutional investment managers.

Investment optimization is important as indicated by the stratified investment approach, but it is secondary to a priority of capital preservation. Uninvested cash over \$1 million and/or growing from that level would get flagged by Treasury if it occurred over an extended period of time. Treasury is measured on many qualitative and quantitative metrics. One of the primary qualitative thresholds is their group being assessed by underlying entities on how well they support underlying business units in seeking to grow.

State of Montana

Organizational Structure and Cash Management Structure

The state of Montana utilizes a multi-department, multi-personnel approach for managing the state’s operating cash. The Montana Department of Administration is responsible for communicating the inflow and outflow of various state agencies as they arise so that funds can be sold and/or invested daily as needed. The Board of Investments (BOI) is responsible for investing the state’s cash to meet daily needs. The Treasurer is ultimately responsible for providing a holistic forecast on a pooled basis for the state’s entire operating cash. The Treasurer provides a daily aggregated forecast of cash flow for each day that BOI uses to manage liquidity.

The Department of Administration or BOI currently receive little in the way of short-term cash flow information from the various agencies. Agencies have access to their funds through a custody bank transfer portal that allows them to make deposits and withdrawals. The potential issues brought on by this lack of transparency is mitigated by the use of a pooled investment structure that allows “borrowing” between agencies to cover any shortfalls and avoid selling investments prematurely. Agency sub-accounts are allowed to be temporarily over-

drafted to satisfy cash flow needs in the short-term, but any account with an accounting shortfall is required to be corrected within a few days' time. System checks and balances are in place to ensure that budgeted spending is not exceeded for a budget period.

All state entities are required to invest in the investment pool, which is optional for local governments, but there are minor few exceptions. This effectively makes it a top-of-the-house design where the Treasury, BOI, and Department of Administration oversee a significant amount of the state's and municipality's operating cash.

The state of Montana does not have a treasury management system in place and instead relies upon experienced personnel, diligent communications, and internally developed spreadsheet models given the multi-departmental structure that separates the underlying cash management responsibilities. The responsibility of managing the short-term investment pool and the cash flow communication requires two full-time employees. The lack of differentiation in daily agency cash flows eliminates a lot of the investment complexity for management efficiency purposes.

Investment Management Process and Structure

Montana has created a short-term investment pool (STIP) that is the required cash investment for all state agencies but optional for local governments and where the custody bank has no presence in a particular area or county and prevents accessibility. The fixed income investment staff oversees the investment function with it requiring the equivalent of one full-time employee to manage the investments according to the liquidity needs. US Bank is the required custody bank for all state funds.

STIP is set up as an internally managed, commingled pool that allows state agencies a single-source investment for cash. BOI prioritizes the safety of assets and liquidity over maximization of returns. STIP allows a maximum duration of 395 days. The maturity schedule for the investment pool is structured such that 10% daily liquidity and 15% of weekly liquidity of the aggregated 90-day pooled liquidity needs. Montana uses Bloomberg to assist with its trading activities related to the fund.

BOI is responsible for ensuring liquidity through daily management of STIP and like any cash investment manager, it is a critical focus of their daily responsibilities. BOI requests that any cash flows exceeding \$1 million be given at least a one-day notice. Occasional surprise cash flows can occur (e.g., ARPA funds) but the system has been able to manage these well and how the their process is supported well by the structure of the commingled investment pool. The sheer volume of transactions that pass through the system each year is massive as they handled approximately 31,000 transactions in 2023.

Global Corporation #2

Organizational and Cash Management Structure

Global Corporation #2 is a Fortune Global 500 company. This corporation boasts a centralized cash management function overseen by a seasoned treasurer with 17 years of experience. This team manages all treasury activities, minimizing risk through a two-bank strategy.

- JP Morgan: Primary bank, handling outgoing payments and offering additional services like asset management and trading.
- Bank of America: Facilitates customer payments due to existing customer relationships with the bank.

Similar to a financial institution, the corporation offers financing to its customers and issues public debt (typically 2- to 10-year maturities) to access lower borrowing rates compared to customer loans. This approach supports their overall financial services business.

Following best practices, the corporation maintains a centralized cash pool. This allows the treasury team to consolidate cash inflows to gain a clear picture of total collections for informed disbursement or investment decisions. It also ensures on demand liquidity for business units such that the treasury group can allocate funds effectively to meet the financial needs of each business unit.

The treasury group utilizes a robust process to gather and analyze cash transaction data across the entire organization. This enables them to develop a rolling 12-month forecast with a highly detailed, daily updated 3-month segment for precise near-term cash flow management. To aid in their responsibility, they currently leverage MS Excel for forecasting and augment this with a treasury management system. They currently use treasury management software, Wall Street TRM, but plan to transition to Quantum in the near future for enhanced capabilities.

As a global company with an expansive international customer base, the biggest challenge lies in streamlining their bank account structure. Their current focus is on reducing the number of smaller, disparate bank accounts, particularly within North America (currently at 60), for improved operational efficiency.

Investment Management Process and Structure

The organization prioritizes capital preservation and liquidity with a simple investment structure. Cash investments are held in highly liquid instruments maturing within 30 days. This cautious approach reflects the inherent volatility of the industrial sector in which they operate. The benchmark used is the fed funds rate, ensuring no credit risk is assumed. Additionally, policy-driven investment allowances further minimize the risk of loss for the treasury group managing cash investments.

Treasury seeks to maximize the cash invested after satisfying their daily liquid requirement. Due to their size and high cash flow activity, a significant balance is maintained in their demand deposit accounts, capped at \$500 million. Any amount exceeding this threshold is invested in instruments maturing within 30 days. The treasury team leverages manual oversight and daily cash flow reports to ensure all available cash outside the bank is invested for optimal returns within established risk parameters.

VII. Cash Management – Best Practice Attributes

Essential Characteristics of a Best-in-Class Cash Management System

This report identifies eight essential characteristics that we believe represent a best-in-class cash management system for enterprises like North Dakota, with multiple cash pools and inflows and outflows occurring at various points.

These characteristics, detailed throughout the report, provide a framework for evaluating current practices and potential improvements.

Attribute 1 – A comprehensive system that captures all pools of cash and cash flow procedures at the sub-entity level across the entire enterprise.

RVK observations of North Dakota’s current structure: The current cash management structure captures the majority of the state’s cash, and the Treasury is able to move cash in and out to satisfy liquidity needs. There are exceptions to this with certain asset pools (Budget Stabilization Fund, Strategic Investments and Improvements Fund, etc.) and cash balances accumulated at agencies moved to no longer be under Treasury oversight and liquidity management (e.g. Dept. of Transportation). The other exception is that a handful of agencies can invest in CDs issued by regional banks or deposit assets outside of Bank of North Dakota (BND), which represents a different paradigm than what is followed by the Treasury for most agencies.

Attribute 2 – Consolidation of all relevant cash balances at the top of the enterprise for maximum visibility and pooling of assets for optimal outcomes.

RVK observations of North Dakota’s current structure: Not all short-term cash is aggregated and rolled up at the Treasurer's top level alongside the general fund. Those that are not currently included are significant in terms of their size (>\$1 billion) and warrant being included based on their similar objectives to other cash managed by the Treasury. We are specifically referring to the Budget Stabilization Fund and the Strategic Investment and Improvement Fund. There is no centralized dashboard that provides a comprehensive view of statewide cash levels.

Attribute 3 – An effective treasury management function and supporting systems that moves cash into the appropriate investment pools as expeditiously as possible and for as long as possible to maximize the time that assets are invested and accruing earnings while minimizing any “idle cash.”

RVK observations of North Dakota’s current structure: No specialized treasury specific technology-based resources (e.g., TMS) are used in the current process for monitoring, managing, and reporting daily cash in and outflows. The current process uses internally developed custom reporting, Peoplesoft, and spreadsheets to aid the Treasury in managing daily and longer term liquidity needs.

Attribute 4 – An intense focus on cash flow forecasting, both within the centralized treasury management function and supported and fed by the underlying participants at the sub entity level.

RVK observations of North Dakota’s current structure: Cash flow forecasting in its current form is primarily based on pulling current information from agencies and is supplemented with historical data and professional experience to determine the state's ongoing liquidity needs. Agencies are empowered with the information to support forecasting and should do so to maximize their returns relative to liquidity needs. Unconsolidated accounts further impede comprehensive cash flow forecasting efforts.

Attribute 5 – A duration/risk stratified investment pool structure that allows an effective treasury management to allocate balances appropriately based on its cash flow forecasting process.

RVK observations of North Dakota’s current structure: Cash is currently directly invested into two types of investments: demand deposit accounts and certificates of deposit which on average are 6 months or less in duration. Increased investment precision is achievable through a 3-tiered investment approach that would effectively increase the overall return on the state's cash. Indirectly, deposited cash held at BND is utilized to facilitate lending across the state and for purchasing securities held on the bank’s balance sheet. The bank manages the asset-liability relationship of loans and assets relative to the deposit base. The Treasury is constrained in its ability to do this currently because of unconsolidated cash pools, constrained investment opportunity set, and limited forecasting technology and resources in place to fully support this effort. Similar investment approaches reside with the State of North Dakota for certain funds suggesting that the creation and management of a duration/risk stratified structure is achievable.

Attribute 6 – Professional, institutional quality investment management and oversight that is separate from treasury management functions.

RVK observations of North Dakota’s current structure: The current investment opportunity set is not reflective of an institutionally managed cash portfolio. This condition is partly due to the long-standing approach to how the state's cash is managed as well as the lack of a formal cash investment policy. Investment currently takes the form of the State’s ownership of and funding of the BND.

Attribute 7 – Effective risk management that avoids inappropriate levels of liquidity mismatch, capital markets risk, and concentration of risk.

RVK observations of North Dakota’s current structure: The forecasting currently done is heavily reliant on Treasury outreach and response from agencies which from our understanding can create time lags that lead to the cash investments being biased shorter and more liquid than necessary. The consequence of this is an investment opportunity cost. There is evident concentration of risk in using BND as the sole depository bank and source of investments. BND's regionally concentrated loan portfolio is a risk from the perspective of a prudently diversified investment portfolio on which state deposits are linked.

Attribute 8 – Focused solely on managing the enterprise’s cash pool and optimal investment outcomes for that cash pool disregarding unrelated and/or conflicting initiatives that compete or interfere with this focus.

RVK observations of North Dakota’s current structure: Under the current structure, Treasury is focused on and able to manage the cash pool and its liquidity with a smaller than average staff and limited tools and resources at its disposal. The requirement to use BND as the primary investment source via the statutory deposit requirement limits return potential that resides in a comprehensive cash management structure. These conditions prevent the Treasury from capitalizing on a self-contained and cohesive cash management function that would benefit the state through more seamless cash flow processes as well as improved investment outcomes. The intermingling of the State’s cash management efforts with funding the Bank of ND and its economic mission creates a potential lack of focus and clarity on the results of each effort.

VIII. Analysis: Current Structure vs Alternatives

Our analysis seeks to establish a baseline of the performance of the state’s cash and investment management from the perspectives of the Treasurer, the underlying agency funds it manages, the Bank of North Dakota, and the state in aggregate. In establishing this baseline, we will evaluate the State’s cash balances and associated liquidity needs, cash flow activity, and investment returns. Utilizing this baseline, we will evaluate alternative cash management structures that align with best practices.

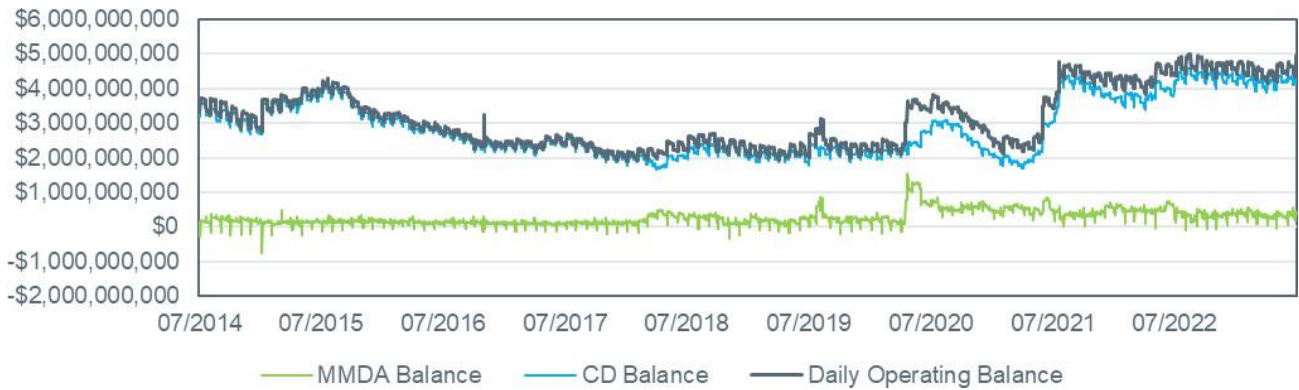
The analysis was conducted with data from the Treasurer’s Office, the Office of Management and Budget, and the Bank of North Dakota. The period of analysis is from July 1, 2014, through June 30, 2023. This period was selected to be sufficiently long to determine general trends and to capture fluctuations in state revenues, while not creating undue burden on state resources. The limitations that result from the selected period will be addressed and remedied to the degree possible in the analysis.

State Treasurer’s Office

The Office of the State Treasurer is responsible for the cash management operation of the general fund and over 200 state funds, with the money held at the Bank of North Dakota. The aggregation of the agency and general fund cash that is not assigned to a special purpose fund is captured in the daily operating balance. This is composed of a balance of cash held in a money market deposit account (MMDA) and cash that has been invested in certificates of deposit (CDs) at the Bank of North Dakota or at banks or credit unions that participate in the BidND marketplace that the Agricultural Commodity Assessment Funds can invest through. MMDAs are interest-bearing accounts that offer access to the money held at any point in time, while CDs offer a fixed interest rate generally in excess of MMDAs in exchange for leaving the funds untouched and on deposit for a specified length of time. Generally, banks will charge a fee to depositors who access the money deposited in a CD prior to the agreed end- date, however, the Bank of North Dakota would waive all such fees for the Treasurer.

As detailed in the exhibits below, in the period analyzed, the Treasurer has generally invested the majority of the daily operating balance in CDs that will provide returns in excess of the interest earned on MMDAs. Given the lockup periods of CDs, this requires the Treasurer to forecast the cash flow needs to ensure that there is a

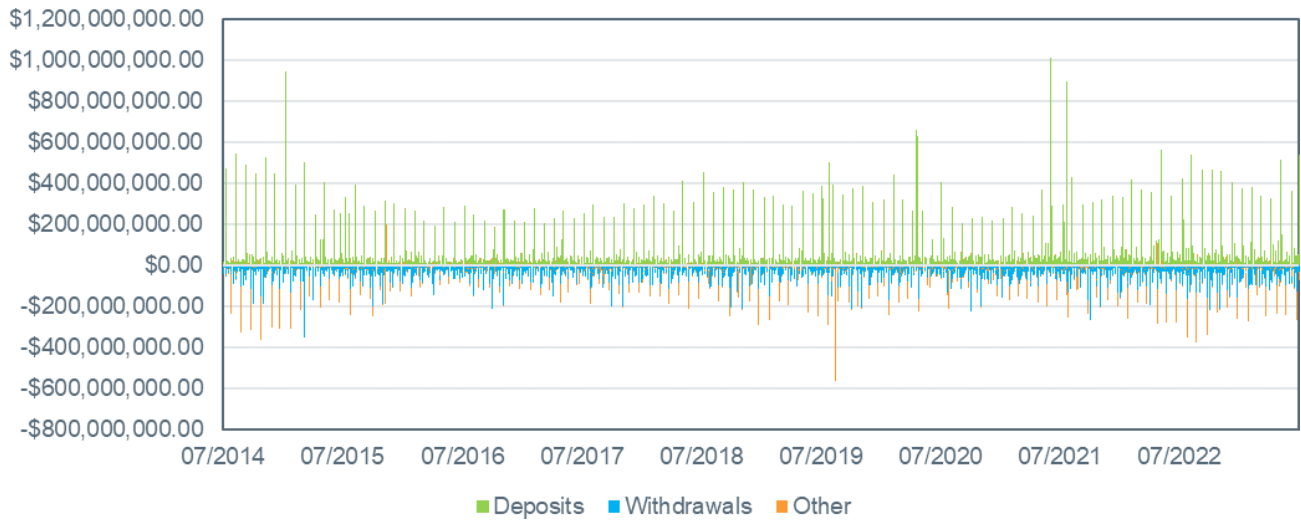
sufficient balance in their MMDA to meet the needs of the state’s obligations. This cash flow forecasting has been done at the aggregate level based on the expected timing of known inflows paired with a review of historical trends of agency spending. While this has generally been successful, when looking at balances on a daily basis there have been brief periods in which cash obligations have resulted in temporary overdrawn MMDA balances, with the largest such occurrence leaving an outstanding balance of -\$736 million due to a one day misalignment of CD purchases and the cash inflow that funded them.



	Min	Max	Avg	Median
MMDA	\$ (736,431,833)	\$ 1,534,002,501	\$ 278,279,690	\$ 223,994,215
CDs	\$ 1,668,000,000	\$ 4,617,000,000	\$ 2,880,046,280	\$ 2,552,000,000
Operating	\$ 1,891,826,959	\$ 4,992,665,614	\$ 3,137,594,680	\$ 2,848,961,205

The daily balances in the period from July 1, 2014, through June 30, 2023, have ranged from a minimum total operating balance of just under \$1.9 billion to a maximum operating balance of just under \$5.0 billion. Over this same period the average and median operating balance has been around \$3 billion. More recent figures are skewed upwards by large inflows from various federal programs. When truncating the period of review to the period of July 2014 through March 2020 to remove the impact of federal funds, we see an unchanged minimum balance, a maximum balance of \$4.3 billion and an average balance of \$2.7 billion.

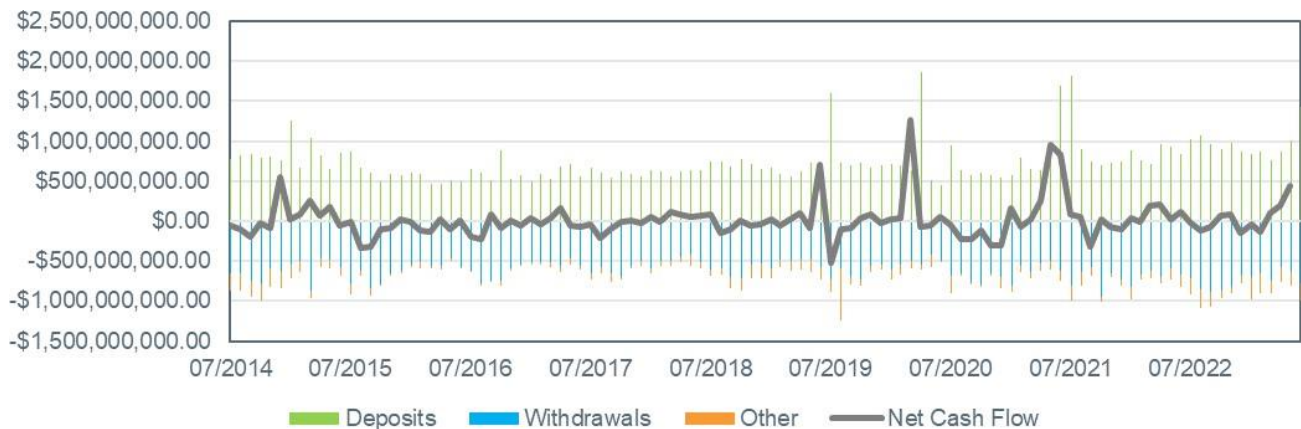
The State Treasurer maintains MMDA daily balances in accordance with the expected cash flows of state moneys. Below, we evaluate what those flows look like on both a daily and monthly basis. The cash flows are composed of deposits (state revenues and fund transfers), withdrawals (disbursements of revenues outside of the Treasurer’s purview and state expenditures), as well as flows defined as “other” consisting of transfers that are not a deposit of the Treasurer’s MMDA account at BND but still affect the cash balance.



	Min	Max	Avg	Median
Deposits	\$ -	\$ 1,011,228,361	\$ 34,696,703	\$ 12,793,660
Withdrawals	\$ -	\$ (352,420,838)	\$ (29,014,348)	\$ (17,122,077)
Other	\$ (548,913,355)	\$ 179,820,000	\$ (5,002,653)	\$ -
NCF	\$ (556,869,035)	\$ 954,781,646	\$ 494,371	\$ -

Over the period reviewed, the most significant net outflow on any given day was just under \$557 million, with the most significant net inflow just under \$955 million. The average net cash flow was positive and amounted to a daily inflow of just under \$500 thousand after accounting for any distributions. These figures help to inform the range of cash that should be held in an MMDA or similarly liquid vehicle on any given day. With this information decisions can be made on minimum balance requirements, if necessary, whether those be dollar figures or a percentage of total cash.

While daily cash flows are important to understand, it is also necessary to ensure that there are not trends in cash flows over longer periods of time that would require additional cash balances to be held in highly liquid vehicles. To evaluate this, we have also reviewed the cash flows of the treasurers account at BND on a monthly basis, looking at the aggregation of daily values for each month in the period.



	Min	Max	Avg	Median
Deposits	\$ 442,933,323	\$ 1,860,546,586	\$ 750,830,154	\$ 689,477,933
Withdrawals	\$ (423,057,254)	\$ (954,552,234)	\$ (627,817,438)	\$ (604,014,753)
Other	\$ (5,862,266)	\$ (658,349,283)	\$ (108,483,448)	\$ (89,975,008)
NCF	\$ (517,640,559)	\$ 1,256,961,367	\$ 15,545,187	\$ (12,504,618)

When reviewing the cash flows on a monthly basis, the net cash flows generally trended more positive, with the exception of the median net cash flow figure. The median net cash outflow of \$12.5 million indicates that some of the larger cash inflows have skewed the average net cash flow figure to be positive, and that in general the cash flows of the Treasurers account at BND are modestly negative in most months. The monthly data, however, does not indicate any increase in net outflows from the cash on hand when compared to daily data, and over the period observed would not support a cash minimum in excess of what would be suggested by the daily figure.

The state money held with the State Treasurer at the Bank of North Dakota earns interest from the assets deposited in the MMDA held at the Bank of North Dakota, the CDs invested in with BND, and the CDs the Agricultural Commodity Assessment Funds have invested in through the BidND system with banks and credit unions in the state of North Dakota. Using data provided by the Treasurer’s Office, BND, and OMB we have calculated a daily return on the operating account. This return assumes that all CDs are held to maturity. As an additional source of general funds, the legislature has appropriated \$520 million from BND bank capital for transfers to the general fund. For illustrative purposes, we have calculated returns inclusive of these transfers should they be considered income for the Treasurer.

Fiscal Year	MMDA Interest	BND CD Interest	Non-BND CD Interest	Combined Interest	Treasurers Return on Interest	BND Transfers to General Fund	Treasurers Interest + BND Transfer Return
FY15	\$79,780	\$5,049,744	\$13,223	\$5,142,748	0.15%	--	0.15%
FY16	\$73,308	\$5,695,833	\$34,458	\$5,803,598	0.16%	--	0.16%
FY17	\$56,516	\$4,181,721	\$42,323	\$4,280,560	0.15%	\$100,000,000	4.43%
FY18	\$165,029	\$4,396,167	\$23,192	\$4,584,388	0.19%	\$70,000,000	3.54%
FY19	\$291,391	\$9,037,166	\$93,622	\$9,422,179	0.39%	\$70,000,000	3.52%
FY20	\$771,612	\$14,699,147	\$187,111	\$15,657,870	0.57%	\$70,000,000	3.01%
FY21	\$568,136	\$7,370,166	\$96,913	\$8,035,215	0.24%	\$70,000,000	2.71%
FY22	\$330,169	\$5,752,584	\$44,957	\$6,127,710	0.13%	--	0.13%
FY23	\$686,086	\$22,153,776	\$138,155	\$22,978,017	0.49%	\$140,000,000	3.73%
Total	\$3,022,027	\$78,336,303	\$673,954	\$82,032,285	0.28%	\$520,000,000	2.36%

Over the period of analysis, the Treasurer’s account earned an annualized 0.28% return on MMDA deposits and CDs. When accounting for the transfers from BND to the general fund as income, this annualized return figure increases to 2.36%. Under the Treasurer’s purview there exist non-interest retaining funds, where the earned interest on the deposits is reallocated to the General Fund. While this reallocation of interest would attribute a

larger return on deposits to the general fund, this return would overstate the returns on state moneys in the general fund and is therefore not explored in this analysis.

Bank of North Dakota

The Bank of North Dakota seeks to maximize the profits made on its earning assets as a means of expanding bank capital and, as a state entity, generating a return for the state. The Bank's earning assets are composed of the loans the bank has made and the securities the bank has invested in. The deposits of the bank, in addition to the Bank's own capital, are utilized as the base of the earning assets subject to the reserve requirements of the bank. Because over half of the Bank's deposits are derived from state moneys, particularly but not limited to those under the Treasurer's account, it is important to capture the returns that the Bank is able to capture with this money in addition to their other deposits. Below we will evaluate the allocations of earning assets between securities and loans, the income earned on bank assets, and the effective total return that the bank has been able to generate. While the bank has a secondary objective of supporting economic development in the state through loans and the various legislative programs it administers, the impact of those programs falls outside of the scope of this project and will not be reflected in this analysis.

Fiscal Year	BND Loans	BND Investments	Total Earning Assets	% Loans	% Investments
FY15	\$3,781,020,453	\$3,732,442,451	\$7,513,462,904	50%	50%
FY16	\$4,306,385,151	\$3,129,210,327	\$7,435,595,478	58%	42%
FY17	\$4,706,639,026	\$2,319,242,311	\$7,025,881,337	67%	33%
FY18	\$4,698,611,261	\$1,924,589,207	\$6,623,200,468	71%	29%
FY19	\$4,523,693,918	\$2,173,114,130	\$6,696,808,048	68%	32%
FY20	\$4,462,574,635	\$2,568,654,566	\$7,031,229,201	63%	37%
FY21	\$4,647,692,015	\$3,339,169,271	\$7,986,861,286	58%	42%
FY22	\$4,624,251,815	\$5,224,831,044	\$9,849,082,859	47%	53%
FY23	\$5,169,594,420	\$4,761,857,712	\$9,931,452,132	52%	48%
Average	\$4,546,718,077	\$3,241,456,780	\$7,788,174,857	59%	41%

The Bank's earning assets have averaged just under \$8 billion over the period of analysis and have averaged approximately a 60/40 split between loans and investments, respectively, when capturing cash holdings in the investment allocation. The table below evaluates the return that the bank has been able to generate based on earning assets in several different manners. The first return looks at the Bank's reported net income, the income retained after interest is paid out to depositors, provisions that have been made for loan losses, and non-interest expenses that have been paid. The second return looks at the total return the Bank has generated from interest income on earning assets before any of the aforementioned expenses. Total income after operating expenses for each fiscal year is estimated using the annual figures from BND, averaging to a monthly figure, and combining six months of each calendar year captured in each respective fiscal year.

Fiscal Year	BND Avg Earning Assets	BND Reported Net Income	BND Net Return on Earning Assets	BND Reported Total Income After Operating Expenses	BND Total Return After Operating Expenses
FY15	\$7,513,462,904	\$121,242,054	1.61%	\$134,400,610	1.79%
FY16	\$7,435,595,478	\$137,215,787	1.85%	\$149,655,910	2.01%
FY17	\$7,025,881,337	\$139,217,191	1.98%	\$149,752,470	2.13%
FY18	\$6,623,200,468	\$150,371,822	2.27%	\$163,200,840	2.46%
FY19	\$6,696,808,048	\$162,756,145	2.43%	\$185,629,140	2.77%
FY20	\$7,031,229,201	\$162,484,765	2.31%	\$192,145,630	2.73%
FY21	\$7,986,861,286	\$130,843,237	1.64%	\$147,332,640	1.84%
FY22	\$9,849,082,859	\$155,978,984	1.58%	\$169,303,150	1.72%
FY23	\$9,931,452,132	\$206,309,920	2.08%	\$270,285,510	2.72%
Total	\$7,788,174,857	\$1,366,419,905	1.97%	\$1,561,705,900	2.24%

Over the period of the analysis, the Bank has generated a total annualized return of 2.24% on earning assets after operating expenses. This reflects the return the Bank has generated on its investments, which after deductions from interest and operating expenses equates to an annualized return of 1.97%, while accounting for the gain/loss figures of the Bank's investments results in an annualized return of 1.77%. This return is on a basis of all earning assets, including those derived from non-state deposits, and does not consider the Bank's ability to leverage non-state deposits for additional revenues for the state – this return will be examined below.

Combined State Cash Investment

The total return on cash in the state under the current structure of investment is a product of the Bank's ability to generate interest on the state deposits and the Bank's capital while leveraging access to non-state deposits. The Bank's net interest and the interest paid to state deposits are the return generated on state deposits and Bank capital. This return will be used as a baseline as we evaluate alternative structures in the next section of the report.

Fiscal Year	Total State Deposits	Interest Paid to State Deposits	Bank Capital	State Assets at Bank	BND Reported Net Income	Combined State Income	Return
FY15	\$4,871,724,440	\$7,748,177	\$649,571,392	\$5,521,295,832	\$121,242,054	\$128,990,231	2.34%
FY16	\$4,630,972,766	\$7,362,809	\$751,231,170	\$5,382,203,936	\$137,215,787	\$144,578,596	2.69%
FY17	\$3,614,496,779	\$5,550,353	\$850,524,369	\$4,465,021,148	\$139,217,191	\$144,767,544	3.24%
FY18	\$3,338,648,199	\$6,128,562	\$842,009,442	\$4,180,657,641	\$150,371,822	\$156,500,384	3.74%
FY19	\$3,492,228,248	\$11,883,466	\$881,577,841	\$4,373,806,089	\$162,756,145	\$174,639,611	3.99%
FY20	\$3,724,306,748	\$19,341,459	\$945,562,938	\$4,669,869,686	\$162,484,765	\$181,826,224	3.89%
FY21	\$4,083,319,977	\$10,804,733	\$951,288,349	\$5,034,608,325	\$130,843,237	\$141,647,970	2.81%
FY22	\$5,592,700,110	\$8,324,187	\$1,012,415,403	\$6,605,115,514	\$155,978,984	\$164,303,172	2.49%
FY23	\$5,952,681,533	\$26,699,184	\$1,178,128,455	\$7,130,809,988	\$206,309,920	\$233,009,104	3.27%
Total	--	\$103,842,930	--	--	\$1,366,419,905	\$1,470,262,836	3.16%

Under this framework, the Bank has generated a realized return of 3.16% annualized on state assets, with a total earned income of just under \$1.5 billion. When accounting for the unrealized gain/loss of the Bank’s investments, the return figure falls to an annualized 2.87%, with total earnings of just over \$1.3 billion. While the Bank’s net income has outpaced the interest paid to state deposits by a factor of around 13, transfers from the bank’s net income to the general fund and other state funds have amounted to just over \$915 million, or approximately two-thirds of the Bank’s net income, over the period of the analysis.

Alternative Structures

Best practices, as detailed in the previous section of the report, would seek to have maximal investment of cash in a manner that is not included on a bank’s balance sheet. We will seek to analyze potential alternative structures of the investment of cash to compare to the existing structure to evaluate the relative opportunity set. We will first look to back-test the various investment structures over the period of the analysis before providing projections of the forward-looking expectations for each structure.

Money Market and Treasure Investment Back Test

As a first point of comparison we will evaluate the difference in interest income the State Treasurer would have earned had the cash under purview earned interest in line with comparable in US Treasury securities and government money market funds, instead of the CDs and money market deposit accounts utilized over the period of analysis. For this, we have assumed that the same decisions of CD investments would have been made in terms of the amount and duration, with each CD mapped to the yield of the corresponding US Treasury security on offer at the time of purchase. For CD investments made with maturities not in alignment with that of available treasury securities, we used an average yield of the surrounding durations. Government Money Market Fund performance is estimated to be that of the ICE Bank of America Merrill Lynch 3M T-Bill Index.

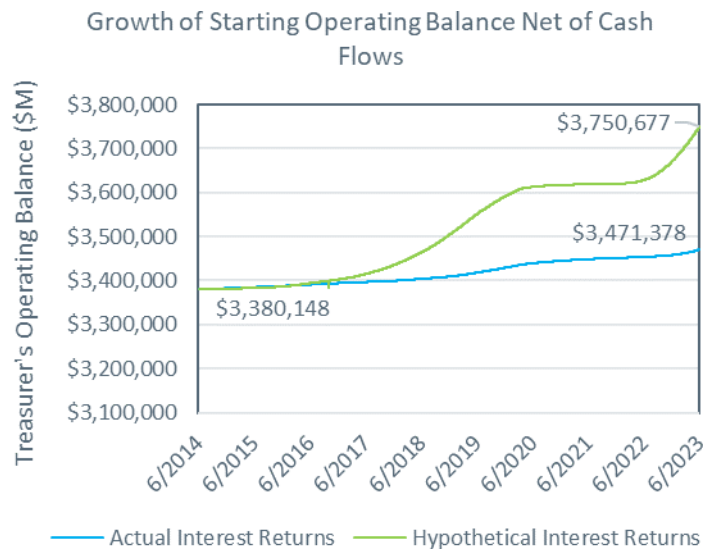
Fiscal Year	Treasury MMDA Interest at BND	Treasury CD Interest	Combined Treasurer's Interest	Hypothetical MM Interest	Hypothetical Term-Matched Treasury Interest	Combined Hypothetical Interest
FY15	\$79,780	\$5,062,967	\$5,142,748	\$50,074	\$3,412,314	\$3,462,388
FY16	\$73,308	\$5,730,290	\$5,803,598	\$292,032	\$10,305,929	\$10,597,962
FY17	\$56,516	\$4,224,044	\$4,280,560	\$581,942	\$15,138,429	\$15,720,371
FY18	\$165,029	\$4,419,360	\$4,584,388	\$3,025,593	\$31,527,259	\$34,552,853
FY19	\$291,391	\$9,130,788	\$9,422,179	\$4,328,506	\$57,307,946	\$61,636,452
FY20	\$771,612	\$14,886,257	\$15,657,870	\$3,322,470	\$43,776,820	\$47,099,290
FY21	\$568,136	\$7,467,079	\$8,035,215	\$382,211	\$5,659,305	\$6,041,516
FY22	\$330,169	\$5,797,541	\$6,127,710	\$1,834,617	\$10,939,650	\$12,774,267
FY23	\$686,086	\$22,291,931	\$22,978,017	\$13,652,208	\$148,396,533	\$162,048,741
Total	\$3,022,027	\$79,010,257	\$82,032,285	\$27,469,653	\$326,464,185	\$353,933,838

As detailed in the table above, had the Bank of North Dakota’s MMDAs and CDs matched the yields of US Treasuries and Government Money Market Funds, it would have yielded the Treasurer’s account an additional nearly \$272 million in interest, assuming all else equal. This figure, however, has several issues that make it a less than optimal comparison including the lack of uncoupling the interrelationship between the Treasurer’s deposits on the balance sheet at BND and the resulting earning assets in which the interest income and

subsequent dividends are derived from, and a lack of any compounding of interest earned. Evaluating the difference in terms of the returns of each scenario alleviates both of these issues, however on its own does not provide a dollar figure for comparison, nor does it provide direct insight into the corresponding impact on BND profits.

The table and graph below capture the relative interest returns and the associated compounding of the initial cash balance of the Treasurer’s account absent the cash flows that occurred during the period of analysis.

Fiscal Year	Treasurer's CD/MMDA Return	Hypothetical Term-Matched US Treasury + Gov't MM Return
FY15	0.15%	0.10%
FY16	0.16%	0.31%
FY17	0.15%	0.57%
FY18	0.19%	1.35%
FY19	0.39%	2.34%
FY20	0.57%	1.52%
FY21	0.24%	0.14%
FY22	0.13%	0.26%
FY23	0.49%	3.24%
Total	0.28%	1.09%



When evaluating the relative interest-only performance of the current structure with the alternative, a meaningful difference is observed with 0.81% of additional annualized performance. Evaluating the growth of the beginning operating account balance, excluding cash flows, seeks to eliminate the impact of BND transfers on the analysis, and still results in a similar spread of outcomes -\$279 million. This is one half of the equation of the investment returns on the state’s cash, with the remainder residing in the net income generated by BND.

The Bank of North Dakota’s net income is the total return earned on the Bank’s earning assets, after accounting for interest and operating expenses. In the case of higher interest payments to the Treasurer, the resulting net income from the bank would fall correspondingly as a higher share of total income is transferred to the Treasurer’s deposits. The table below evaluates how the net income figures would have compared for each fiscal year of the analysis, all else being equal. These figures do not account for potential compounding interest, changes to the available earning assets, or differences in BND transfers. As a point of reference, the transfers from the Bank of North Dakota to the general fund and other fund transfers are included. While the level of transfers observed over the period is still less than the net income of the Bank, the margins would be compressed significantly, and after factoring in other state deposits at the bank this trend would be expected to continue.

Fiscal Year	BND Reported Net Income	BND Net Return on Earning Assets	Adjusted Hypothetical Net Income	BND Net Return - Hypothetical Term-Matched US Treasury + Gov't MM Interest	BND Transfers
FY15	\$121,242,054	1.61%	\$122,922,413	1.62%	\$28,600,000
FY16	\$137,215,787	1.85%	\$132,421,424	1.76%	\$19,989,000
FY17	\$139,217,191	1.98%	\$127,777,380	1.82%	\$116,932,000
FY18	\$150,371,822	2.27%	\$120,403,358	1.81%	\$128,614,000
FY19	\$162,756,145	2.43%	\$110,541,873	1.65%	\$115,109,000
FY20	\$162,484,765	2.31%	\$131,043,345	1.84%	\$137,550,000
FY21	\$130,843,237	1.64%	\$132,836,936	1.63%	\$109,605,000
FY22	\$155,978,984	1.58%	\$149,332,427	1.48%	\$30,397,000
FY23	\$206,309,920	2.08%	\$67,239,196	0.67%	\$228,238,000
Total	\$1,366,419,905	1.97%	\$1,094,518,351	1.59%	\$915,034,000

The relationship between the Bank's balance sheet and the state's deposits at the bank does not allow for clear analysis of the ultimate impact higher rates paid to depositors would have on the bank. Under a different interest rate environment changes could be made to the risk profile of the Bank's investments, the rate offerings on loans made by the Bank, and the scale of the transfers from Bank income.

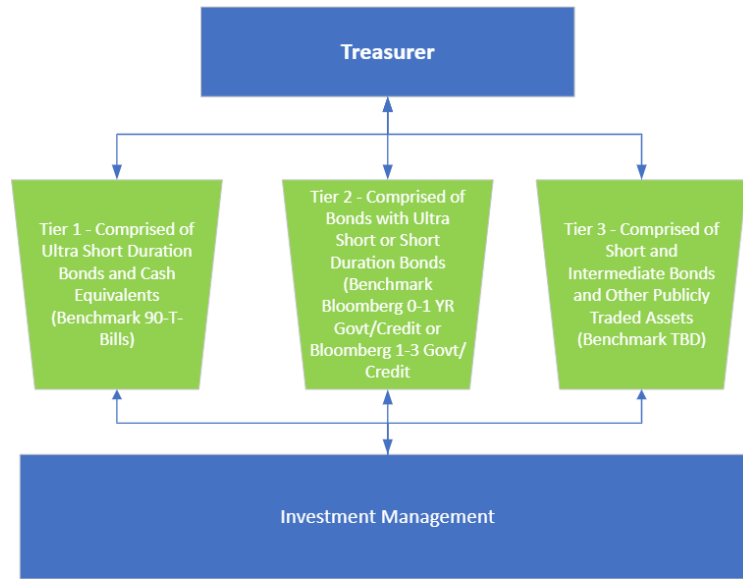
Stratified Three-Tiered Investment Back Test

As a next point of comparison to best practices, we will look to evaluate the current structure of the Treasurer's cash investment next to a duration stratified investment approach. Under this hypothetical approach the Treasurer's cash balance is held with a third-party custodian bank similar to those utilized by the state's long-term investment funds (i.e. Legacy, Common Schools Trust, PERS, etc.) and managed by investment professionals utilizing third-party investment management. Under this structure, the assets of the state's short-term reserves (Budget Stabilization Fund and SIFF) would be coinvested alongside the Treasury's operating balance.

For this investment structure, cash would be invested across the following three tiers of varying liquidity and risk:

- i. **Tier 1 – Operating Cash.** This is all assets needed for daily operation of the state and composed of extremely high quality and very short duration fixed income / cash equivalents. Tier 1 operating cash would need to be linked to the state's commercial banking accounts in a manner that provides daily liquidity for all balances and an automatic sweep feature so that the assets can earn the returns available from extremely short-term high-quality securities. The analysis will assume investment in the ICE BofaML 3M T-Bill Index.
- ii. **Tier 2 – Liquid Reserves.** This provides a buffer between operating cash and invested reserves and is not anticipated to be drawn from on a daily basis yet provides a liquid backstop for periods of higher and/or unexpected liquidity needs. These reserves remain highly liquid, high quality, and short duration to be available as needed, while also taking moderately more interest rate and credit risk than the Tier 1 operating cash portfolio. The analysis will assume the returns of the Bloomberg 1-3 Year Govt/Credit Index.

- iii. **Tier 3 – Invested Reserves.** This provides higher returns through broad diversification and moderate exposure to liquid risk assets beyond fixed income for assets not needed for Tier 1 or 2, and for which there is a high confidence they will not be needed for liquidity purposes in the near or intermediate term. The allocation should continue to emphasize liquid assets and should be determined by a formal asset allocation study. For the purposes of this analysis, we will utilize a hypothetical portfolio blend of various equity and fixed income exposures that maintain a 50/50 split between the two broad asset classes.



The resulting three tiers and their allocations for the analysis are detailed in the table below:

Index / Allocation	Asset Class	Operating Cash	Liquid Reserves	Invested Reserves
Russell 3000	Broad US Equity	0%	0%	35%
MSCI ACWI IMI Ex US	International Equity	0%	0%	15%
Bloomberg US Gov/Crdt 1-3 Year	Short-Duration Gov't Fixed Income	0%	100%	0%
Bloomberg US Agg	Intermediate Fixed Income	0%	0%	35%
Bloomberg US HY 1-3 Year Index	High Yield Fixed Income	0%	0%	7.5%
Custom Diversified EMD Index*	Emerging Markets Debt	0%	0%	7.5%
ICE BofAML 3M US T-Bill Index	Cash Equivalents	100%	0%	0%
Total		100%	100%	100%

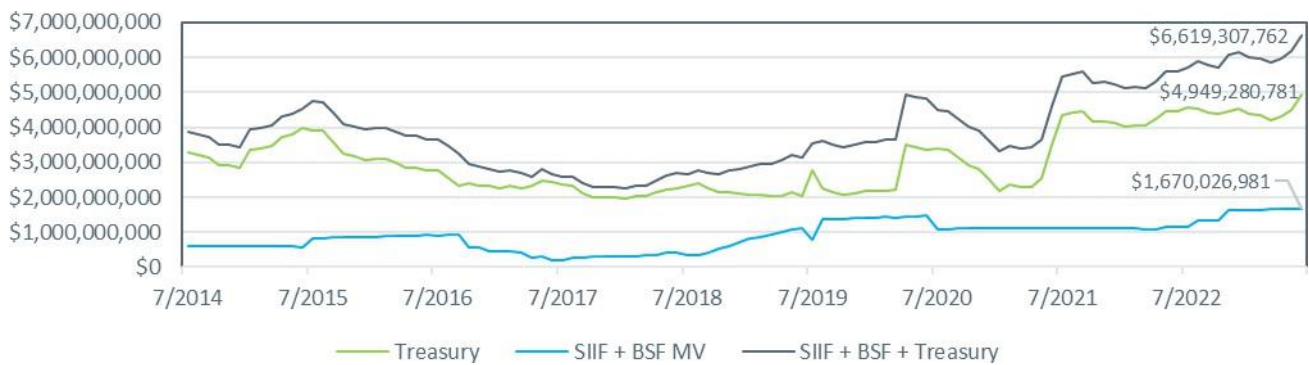
*Custom Diversified EMD Index is composed of an equal weighted blend of the JPM EMBI Global Diversified Index, JPM GBI EM Global Diversified Index, and JPM CEMBI Broad Diversified Index.

In practice, the allocations between the three tiers would be evaluated and monitored on a daily basis and rebalanced as needed to ensure sufficient access to cash to cover the states obligations while optimizing the return of the cash not needed on a short-term basis. For the purposes of this analysis, we will utilize minimum

and maximum balance constraints for the operating cash and liquid reserve allocations based on historical cash needs and will otherwise assume percentage allocations roughly equal to the initial starting balances of each tier required to meet the minimum investment requirements.

All cash flows are assumed to be unchanged from the historical record of the period of analysis, with all cash net cash flows out of the state pool of cash being drawn from the operating cash pool, with corresponding rebalancing occurring between each of the investment tiers. The periodicity of data for the analysis is monthly; cash flows and rebalancing are assumed to occur mid-month. Returns are assumed to be those of the indexes stated above, however in practice differences in implementation from the benchmark could result in returns above or below the calculated returns. As the analysis is evaluating the opportunity set for the state’s cash absent the Bank of North Dakota, cash transfers from the Bank have been excluded. This, however, could differ from practice should the legislature continue to find merit in transfers from the Bank to the general fund.

As a baseline for the balance and allocation constraints of the three-tiered back-tested model, we evaluated the historical balances and cash flows of the Treasurer’s account, the Budget Stabilization Fund, and the Strategic Investment and Improvements Fund. For the operating reserve portion of the cash investments, as the highly liquid pool intended to cover day-to-day expenses, we have looked at the maximum cash outflows as a conservative figure for the minimum investment amount. The Treasury account had a maximum monthly outflow of just over \$500 million, while offsetting cash flows between the Treasury and the two reserve funds, SIIF and BSF, saw a maximum monthly outflow of just under \$450 million. While proper forecasting could reasonably be expected to reduce the required minimum operating balance, for purposes of conservatism in modeling we are assuming imperfect foresight into future cash needs. As a result of the this, paired with historical average combined balances, we have utilized a minimum of \$400 million and a maximum of \$750 million, or roughly 10%-20% of the beginning combined balance. This additionally falls in line with the liquidity practices that the state of Montana utilizes for their cash management system.



Balances	Min	Max	Avg	Median
Treasury	\$1,970,686,775	\$4,949,280,781	\$3,026,992,224	\$2,833,784,608
SIIF + BSF	\$213,460,333	\$1,670,026,981	\$905,859,370	\$913,107,915
Treasury + SIIF + BSF	\$2,271,293,793	\$6,619,307,762	\$3,932,851,594	\$3,669,751,231

Net Cash Flows	Max Outflow	Max Inflow	Avg	Median
Treasury	-\$517,640,559	\$1,256,961,367	\$14,529,010	-\$12,849,360
SIIF + BSF	-\$380,000,000	\$545,910,453	\$8,856,459	\$193,430
Treasury + SIIF + BSF	-\$441,469,016	\$1,256,876,776	\$23,385,559	\$5,048,020

For the purposes of the constraints of the liquid reserve investment tier we looked to the historical balances of the combined reserve funds. Over the period of the analysis, the two reserve funds, BSF and SIIF, combined to have an average balance of just over \$900 million, and a maximum balance of just under \$1.7 billion. Again, for purposes of conservatism, we have opted to set the minimum balance at \$1.0 billion or approximately 25% of the starting combined balance, in excess of the average balance, while the maximum balance of \$1.5 billion roughly aligns with a 40% maximum allocation. The remaining assets in the model were allocated to the invested reserves investment tier, amounting to a 60% target allocation, or a starting investment of approximately \$2.3 billion – in line with the combined minimum balance of the Treasury and reserve funds. These constraints are detailed in the table below.

	Operating Cash	Liquid Reserves	Invested Reserves
Initial Allocation	15%	25%	60%
Minimum Allocation	\$400,000,000	\$1,000,000,000	N/A
Maximum Allocation	\$750,000,000	\$1,500,000,000	N/A

As detailed in the table below, absent the historical transfers from the Bank of North Dakota, the Treasurer’s operating balance would be nearly \$278 million higher than the actual June 30, 2023, balance had the stratified three tier investment approach been implemented at the start of the period of analysis. Due to the economies of scale of cash investment, and the three-tiered investment approach, this is further extended when incorporating the balances of the reserve funds, resulting in a hypothetical increase to the balance of more than \$640 million. Incorporating other state balances currently held at the Bank, in addition to the longer investment horizons that effective cash flow forecasting would enable would both further increase this dispersion in outcomes.

Balance Difference Compared to Current Ending Balance	Treasury	Treasury+SIIF+BSF
	\$277,881,762	\$643,759,870

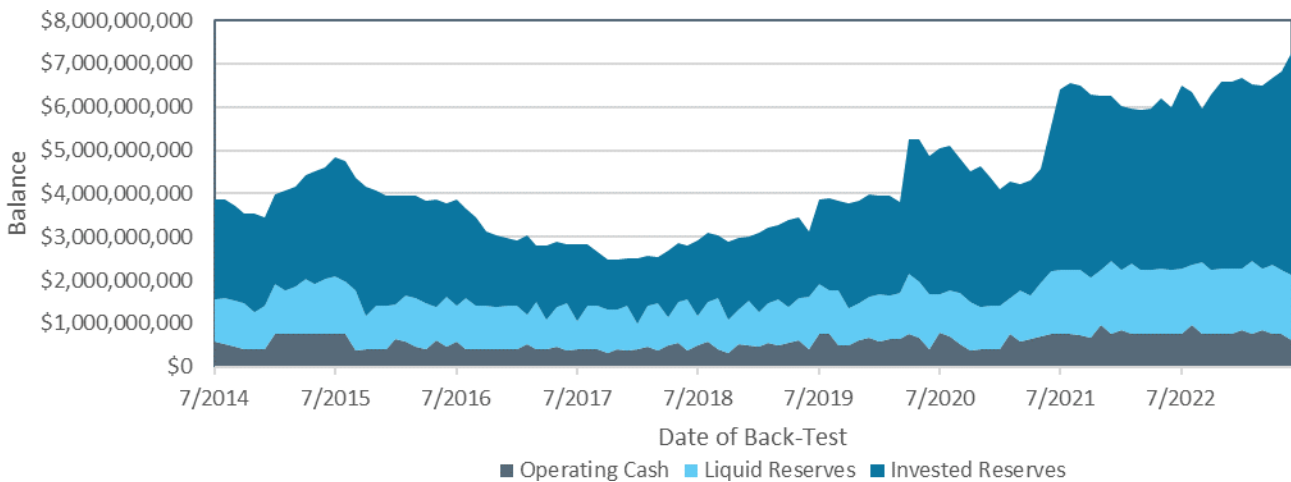
When evaluating the relative returns of the three-tier model portfolio, with the respective weights to each pool calculated monthly, to the returns earned by the Bank of North Dakota on all state assets at the Bank, defined as state deposits and bank capital, we observe an improvement of annualized returns over the period of 0.42%. Additional cash pooling through the inclusion of other state deposits currently held at BND would further increase the return spread as more assets would be pooled to the higher returning invested returns portfolio, as reflected in the second table below.

	2023	2022	2021	2020	2019	2018	2017	2016	2015	Total Return
Model Portfolio Returns (Treasury+BSF+SIIF):	6.76%	-9.13%	13.69%	4.41%	5.63%	3.02%	5.83%	1.71%	1.44%	3.55%
Total Return to State Assets at BND (Interest+BND Net Income+G/L)	1.71%	2.21%	2.74%	3.15%	4.06%	3.67%	3.15%	2.71%	2.48%	2.87%

Returns	1Y	3Y	5Y	7Y
Model Portfolio Returns:	6.7626%	3.3204%	3.9966%	4.1159%
Operating Cash Portfolio Returns:	3.5931%	1.2723%	1.5510%	1.3711%
Liquid Reserves Portfolio Returns:	0.5251%	-0.8841%	1.1328%	0.8876%
Invested Reserves Portfolio Returns:	9.5958%	4.9640%	5.4796%	6.3255%

The following exhibits evaluate the distribution of monthly balances between each of the tiers and in combination when evaluating the three-tiered investment program across treasury and reserve fund assets. With a simple, conservative, rules-based approach the outcomes maintain substantial availability liquidity, with a monthly minimum operating cash balance in excess of \$330 million. As detailed in the graph below of our back-tested results, as cash inflows and market return allow, assets are accumulated in the longer-term, higher earning, invested pool resulting in additional asset growth over time while still maintaining sufficient liquidity.

Treasury+SIIF+BSF Balance Data:	Operating Cash	Liquid Reserves	Invested Reserves
Minimum	\$330,325,003	\$588,790,752	\$1,090,164,008
Maximum	\$961,707,787	\$1,707,511,228	\$5,153,089,982
Median	\$572,349,041	\$1,071,218,137	\$2,359,080,944
Average	\$580,184,540	\$1,126,547,602	\$2,576,233,370



Money-Market and Treasury Investment Forecast

While back-testing can be instructive, it is naturally limited by the market environment of the period of analysis. As previously noted, the period of analysis was selected to ensure a diverse economic environment for the state of North Dakota was captured, with both strong and weak oil markets included. However, a natural limitation of

the period was the low interest rates on fixed income securities that persisted. Now, with higher present interest rates and the prospects of a more normalized rate environment moving forward, the investment opportunity set of the last decade is likely not representative of future investment prospects. The next portion of the analysis will seek to establish forecasted expectations for the various investment structures under a more normalized fixed income environment.

As a baseline for a normalized rate environment, we conducted two analyses that look at the average yields of Treasuries and the rates offered by the Bank of North Dakota on MMDAs and CDs. The first analysis expands the period of analysis to January 2000, the first date of first available rates data the Bank was able to provide. The expansion of the period helps to capture periods of higher interest rates, prior to the global financial crisis and the subsequent rate cuts that have proven persistent. Removing the impact of the near-zero rates experienced for the majority of the last decade, we additionally reviewed the relative interest rates offered for the period of January 2000 through December 2007. In both analyses we calculate the weighted average return of investing in Treasury's and CDs by utilizing the average historical allocations of the State Treasurer's account over the period of analysis from July 2014 through June 2023.

Avg Yields Since 1/2000	Cash	1M Avg	2M Avg	3-Mo Avg	6-Mo Avg	1Y Avg	2Y Avg	3Y Avg	4Y Avg	5Y Avg	Wtd Avg
Treasurys	1.70%	1.43%	1.46%	1.74%	1.85%	1.92%	2.11%	2.29%	2.47%	2.66%	1.80%
BND	0.40%	1.03%	1.07%	1.15%	1.28%	1.54%	1.81%	2.03%	2.20%	2.46%	1.19%
Difference	1.30%	0.40%	0.40%	0.59%	0.56%	0.38%	0.30%	0.26%	0.28%	0.20%	0.60%
Avg Historical Allocation	8.11%	1.87%	4.04%	24.08%	54.70%	5.68%	0.67%	0.33%	0.11%	0.42%	

Avg Yields 1/2000-12/2007	Cash	1M Avg	2M Avg	3-Mo Avg	6-Mo Avg	1Y Avg	2Y Avg	3Y Avg	4Y Avg	5Y Avg	Wtd Avg
Treasurys	3.23%	2.68%	2.72%	3.26%	3.38%	3.46%	3.70%	3.88%	4.06%	4.24%	3.31%
BND	0.90%	2.51%	2.59%	2.66%	2.77%	3.26%	3.73%	3.93%	4.13%	4.31%	2.62%
Difference	2.33%	0.17%	0.13%	0.60%	0.61%	0.20%	-0.03%	-0.05%	-0.06%	-0.07%	0.69%
Avg Historical Allocation	8.11%	1.87%	4.04%	24.08%	54.70%	5.68%	0.67%	0.33%	0.11%	0.42%	

Under both periods of analysis, we observed higher rates offered by investing in Treasuries than in the CDs of the Bank of North Dakota. This difference indicates that if historical trends persist, the Bank will need to provide sufficient transfers to the general fund in amounts of 0.60% to 0.69% of assets annually in order for the Treasurer to break even. At the Treasurer's ending balance for the period of the analysis, this would equate to approximately \$60 to \$70 million per biennium. Accounting for the growth of assets through the normalized yields and assumed net cash flows in line with the average of the period of analysis, the anticipated breakeven transfers over the next 20 years would need to average between \$95 and \$125 million per biennium, growing from an estimated \$63 million to \$131 million if rates normalize to their averages since 2000, and from \$72 million to \$188 million if rates normalize to the 2000-2007 average. In either case, based on the transfers the Bank has made in recent years and the expectations for the earnings potential of the Bank, we would not anticipate any concerns with the Bank's ability to meet or exceed these transfers.

Stratified Three-Tiered Investment Forecast

While the Bank, through its income earned on loans and investment securities and its ability to leverage non-state deposits, would be anticipated to be able to meet or exceed the returns the state deposits could earn investing directly in US Treasury securities and money market funds, this analysis additionally explores a comparison of the Bank with the proposed three-tiered investment program. For this analysis, we explore the projected outcomes of the current structure of cash management to our proposed structure by utilizing 5000 paths of Monte Carlo return simulations over a period of 20 years applied to the balances, cash flows, and anticipated investment allocations of each structure. The model requires assumptions to be made for the anticipated asset returns and volatility, the correlations between assets, as well as anticipated cash flows, program costs, and program structure.

As detailed previously, the example structure of the three-tiered investment program is shown below with the underlying allocations to each asset class included:

Asset Class	Operating Cash	Liquid Reserves	Invested Reserves
Broad US Equity	0%	0%	35%
International Equity	0%	0%	15%
Short-Duration Gov't Fixed Income	0%	100%	0%
Intermediate Fixed Income	0%	0%	35%
High Yield Fixed Income	0%	0%	7.5%
Emerging Markets Debt	0%	0%	7.5%
Cash Equivalents	100%	0%	0%
	100%	100%	100%

The return and risk assumptions utilized are based on RVK's 2024 capital market assumptions, which project the expected annual returns of each asset class over a 20-year horizon, with the inputs detailed below:

Asset Class	Arithmetic Return	Standard Deviation
Broad US Equity	6.50%	16.00%
International Equity	9.15%	18.85%
Short-Duration Gov't Fixed Income	3.00%	3.25%
Intermediate Fixed Income	4.00%	5.00%
High Yield Fixed Income	8.00%	13.00%
Emerging Markets Debt	6.17%	9.70%
Cash Equivalents	2.75%	2.00%
	100%	100%

The structure of the forward-looking model of the proposed investment program is consistent with what was utilized for the back-test, with included conservatism in the allocations to each of the operating cash and liquid reserve pool allocations. The one exception is the removal of the initial allocation constraint, as necessitated by the higher starting asset amounts, we have instead utilized the mid-point of the minimum and maximum balance constraints.

	Operating Cash	Liquid Reserves	Invested Reserves
Minimum Allocation	\$400,000,000	\$1,000,000,000	N/A
Maximum Allocation	\$750,000,000	\$1,500,000,000	N/A

The analysis for the proposed three-tiered investment program utilizes Monte Carlo outputs for each of the three investment pools, applying the projected returns to the balance of each respective pool, accounting for expected cash flows into the portfolio and rebalancing cash flows between the pools. Expected cash flows were determined by evaluating the average monthly cash flows excluding federal fund flows and transfers from the Bank of North Dakota to the general fund from the period of the back-test resulting in expected positive cash flows of \$135 million for the state deposits and \$241 million when also accounting for the state’s liquid reserve funds. These values are based on recent historical trends and may differ from future realized cash flows in both magnitude and direction.

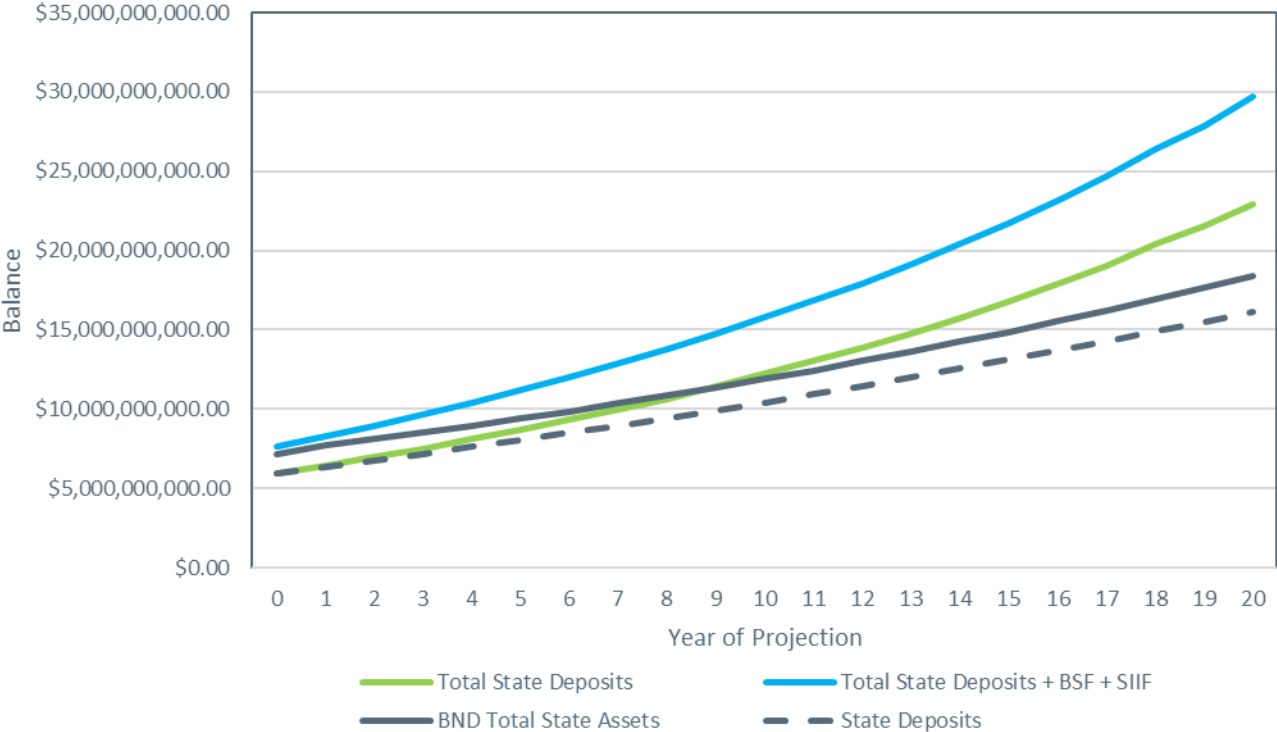
Meanwhile, for the purposes of forecasting the income of the Bank, we have mapped the securities portion of the investment portfolio to our short-duration gov’t fixed income assumption and have established a custom assumption for the Bank’s loan portfolio. For the purposes of the loan portfolio, we have established our assumption on the basis of the prime rate, the rate commercial banks charge to their highest quality buyers, leveraging the historical spread of the interest rate over cash equivalents to produce a return assumption, and assuming unchanged volatility. Evaluating the prime rate in comparison to the historical yields of the ICE BofAML 3M US T-Bill Index, resulted in an approximate spread of 3.25%. The assumed allocations between the two investment opportunities are based on the historical averages observed during the period of analysis.

Asset Class	Allocation	Arithmetic Return	Standard Deviation
Short-Duration Gov’t Fixed Income	40%	3.00%	3.25%
Custom Loan Assumption	60%	6.00%	2.00%

For the forecasted returns of the current structure, we have structured the model to calculate the gross returns of the model by utilizing the projected Monte Carlo returns of the 60% loans / 40% securities portfolio on the total earning assets of the bank. The gross income is then netted down for operating expenses as a percentage of total assets, composed of borrowing expenses, derivative expenses, and overhead expenses offset by fee income. Over the period of the analysis, we have observed that on average the more variable expenses of borrowing and derivatives have been around 0.30%, however, in recent years this has trended downwards, and our model assumes a continuation of this trend, with our ultimate assumed operating expense set at 0.20%. For the more fixed input cost of overhead, we assumed a starting point in line with the \$34.5 million expense in 2023 and have adjusted this by the observed growth rate for the period of analysis at 3.85%. As there have been no discernable trends in the expected path of fee income, we have assumed that this value will persist at the average rate of \$6.3 million observed during the period of the analysis. The model assumes that the interest paid to depositors is in line with the Treasurer’s weighted average rate calculated for the period of January 2000 through February 2024 at 1.19%. For the expected cash flows in the model, we have utilized the deposit change figures from the Bank of North Dakota’s deposit forecast model, netting out the impact of inflows from various recent federal programs, resulting in a total annual inflow of \$137 million. In the first graph below, we show the resulting forecasted 50th percentile outputs from the model for the proposed three-tier investment program for the state deposits, the state deposits pooled with the Budget Stabilization Fund and Strategic Investments and

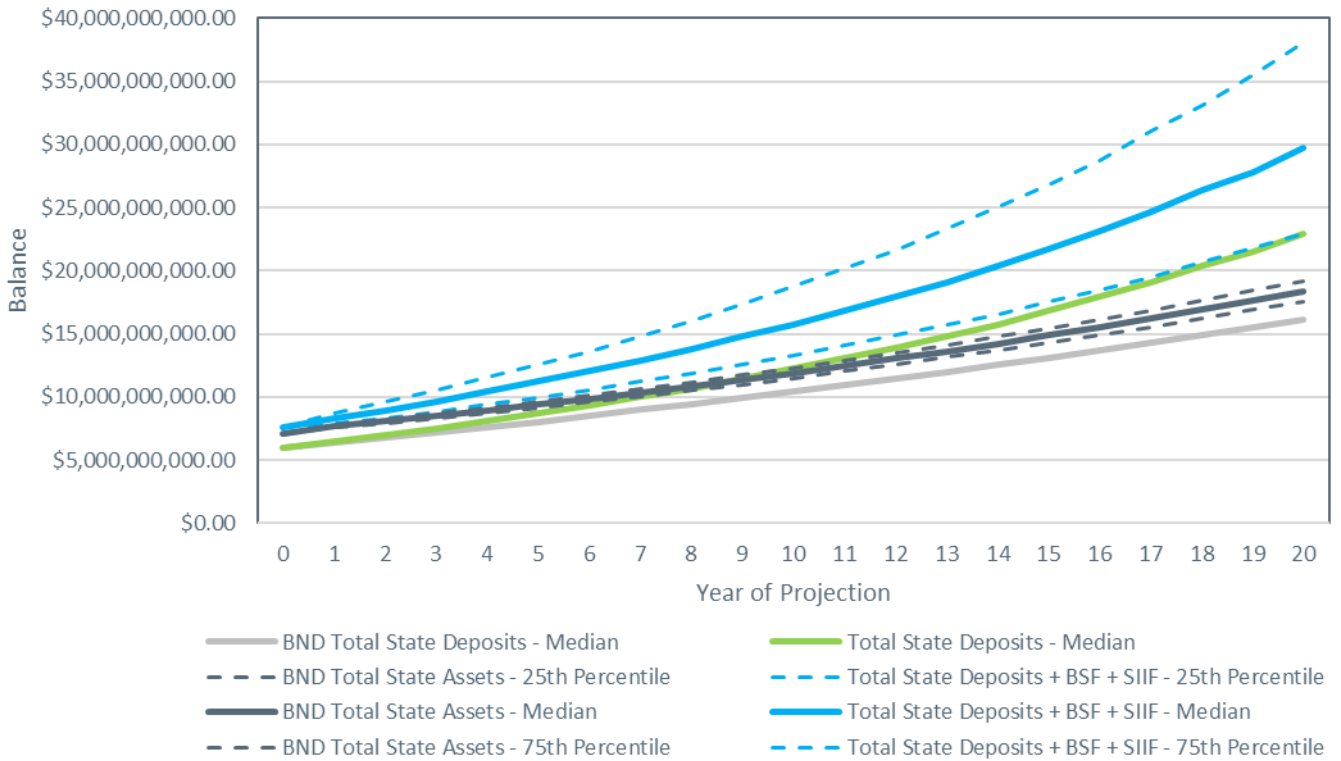
Improvements Fund, and the forecasted total state assets held at BND under the State’s current cash investment structure consisting of state deposits and bank capital. As shown in the graph, at present the total state assets held at the Bank of North Dakota falls just below the combined assets of the state’s deposits pooled with the two reserve funds. The divergence in expected program returns shows the median expected state deposits outcome in the three-tiered investment structure to surpass the total State assets at the Bank’s in year 8.

Median Projected Outcomes – State Deposits & Reserves vs. BND Total Earning Assets

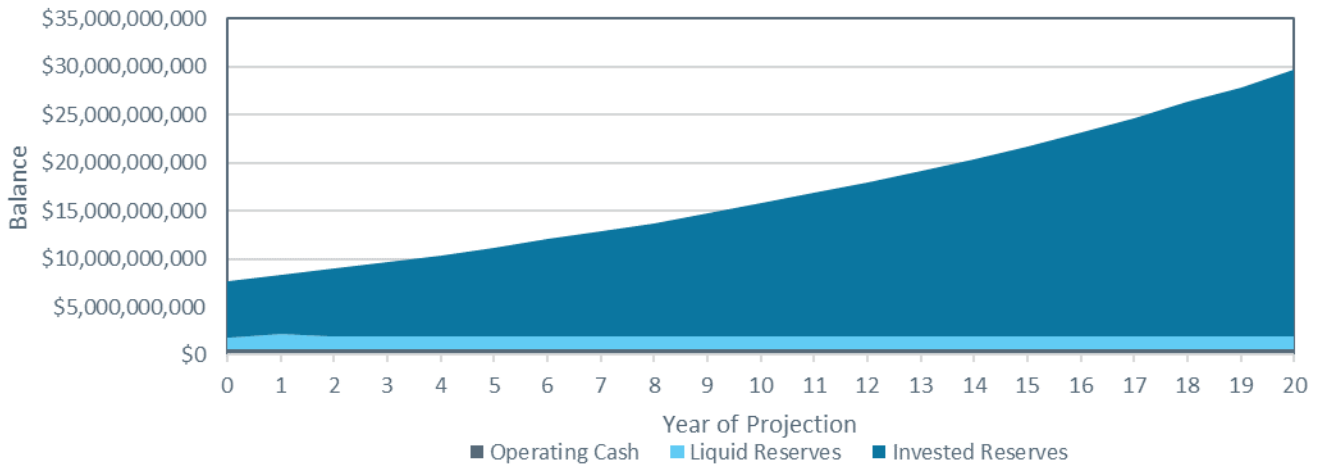


However, with the introduction of the invested reserve investment pool, comes assets that have additional variability in their expected returns, so while median outcomes can be instructive, they do not provide the full picture. To provide more insight into the expected outcomes of each program, we have additionally reviewed the distribution of outcomes for each, looking at the expected 25th and 75th percentile events in the graph below. When expanding the analysis to include a broader range of outcomes we observe that by year 20 of the projections the 25th percentile outcomes of the three-tiered investment program exceed the 75th percentile outcome of the total Bank state assets. While the Bank’s outcomes provide more expected certainty, given the minimal volatility of their investments, this does come at the expense of expected outcomes. The higher expected returns and volatility of the three-tiered investment program does produce outcomes that would fall below the expected outcome of the Bank, however, the maximum expected balance of the state assets at the Bank would rank in the 51st percentile of state deposit outcomes, and the 26th percentile when pooling the state’s reserve funds. The three-tiered investment approach benefits through the accumulation of assets in the invested reserves as detailed in the second exhibit below.

Projected Outcome Distributions – State Deposits & Reserves vs. BND Total Earning Assets



Projected Median Tier Balances – State Deposits & Reserves

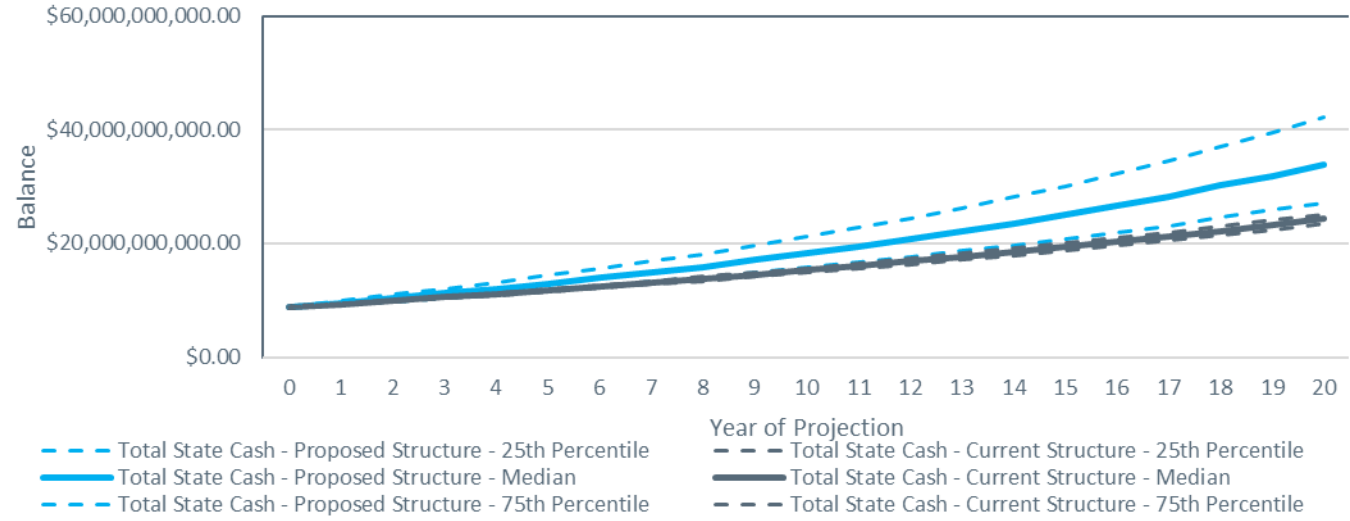


In order to provide the most equivalent matching of the investment tradeoffs, we have evaluated the outcomes of each investment program across the totality of assets currently incorporated in cash management and investment. This starting value is inclusive of all bank assets excluding non-state deposits, as well as the balances of the two reserve funds. In this comparison we assume that the current structure continues in its current form,

with the Bank operating as it is currently including its use of non-state deposits as a part of the earning assets, while the reserve funds would continue to be invested external to the Bank with third-party investment managers in short duration fixed income funds. For the purposes of this model, we have assumed that the reserve funds would achieve the same returns as modeled for the liquid reserve portion of the proposed structure. For the proposed structure, we have modeled for the state deposits and reserve funds to be pooled collectively in the three-tiered investment program, with the bank continuing operations with the non-state deposits and its own capital. Interest paid to non-state deposits is assumed to be at the rate calculated for the weighted average allocation of state deposit investments when normalizing rates to the levels seen on average since the year 2000.

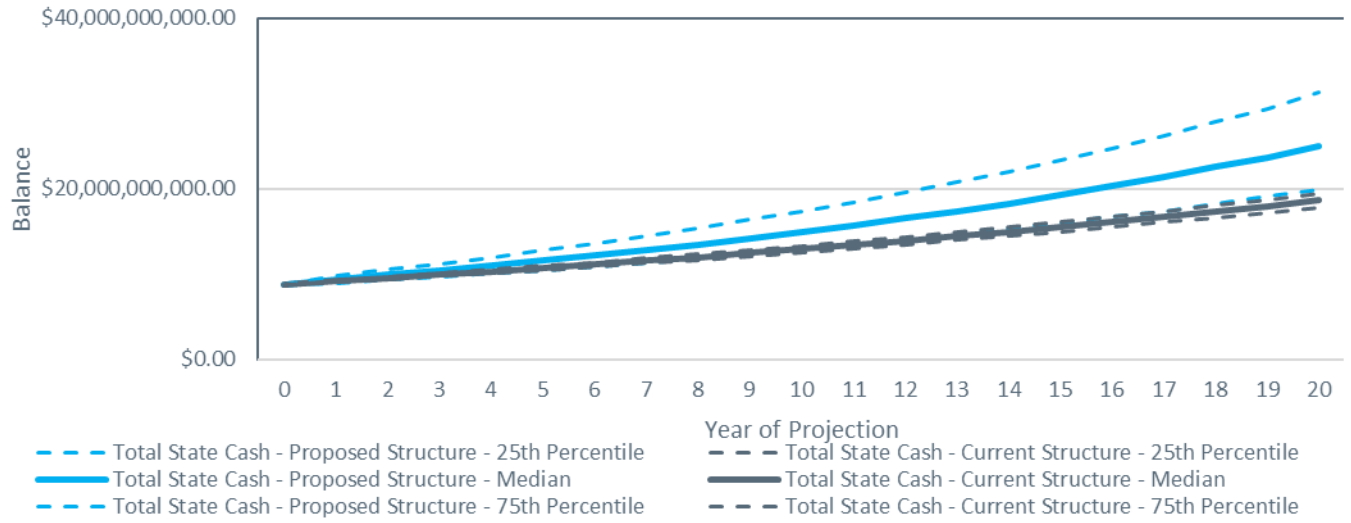
Under this scenario, the outcomes of the proposed structure continue to add value relative to the existing structure, with the 25th percentile outcome of the proposed structure reflecting a balance in excess of the 75th percentile outcome of the current structure at year 20 of the projections. Meanwhile on the lower end of outcomes, the 25th percentile outcome of the proposed structure falls between the current structures median and 25th percentile outcome.

Projected Outcome Distributions – Proposed vs. Current Structure



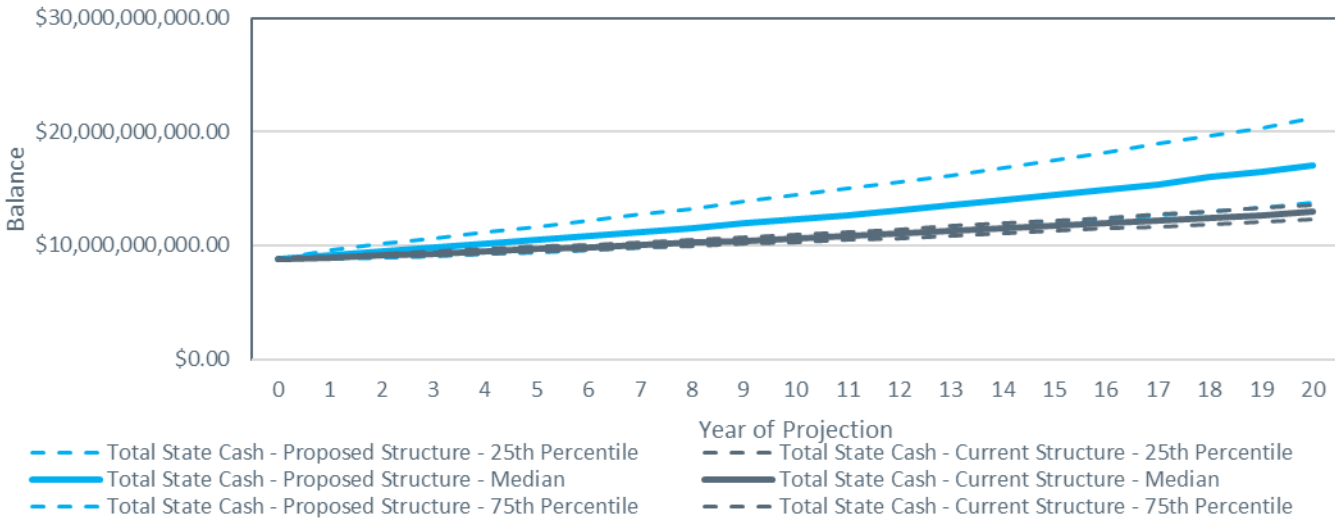
Under the specific parameters utilized for the projected outcomes so far in our analysis, the proposed structure has provided material improvements in the expected outcomes of the state’s cash balance. However, to better ensure that the results are not skewed by unintentionally favorable inputs, we have conducted additional forecasts to stress test the model. As a primary driver of the state’s current cash position, and its prospective cash position moving forward, we will evaluate the impact that cash flows had on the analysis. First, we must consider the scenario in which cash flows and state expenditures are offset, resulting in no net cash flows. As reflected in the exhibit below, this change in scenario results in similar relative outcomes for the proposed structure.

Projected Outcome Distributions – Proposed vs. Current Structure – No Net Cash Flows



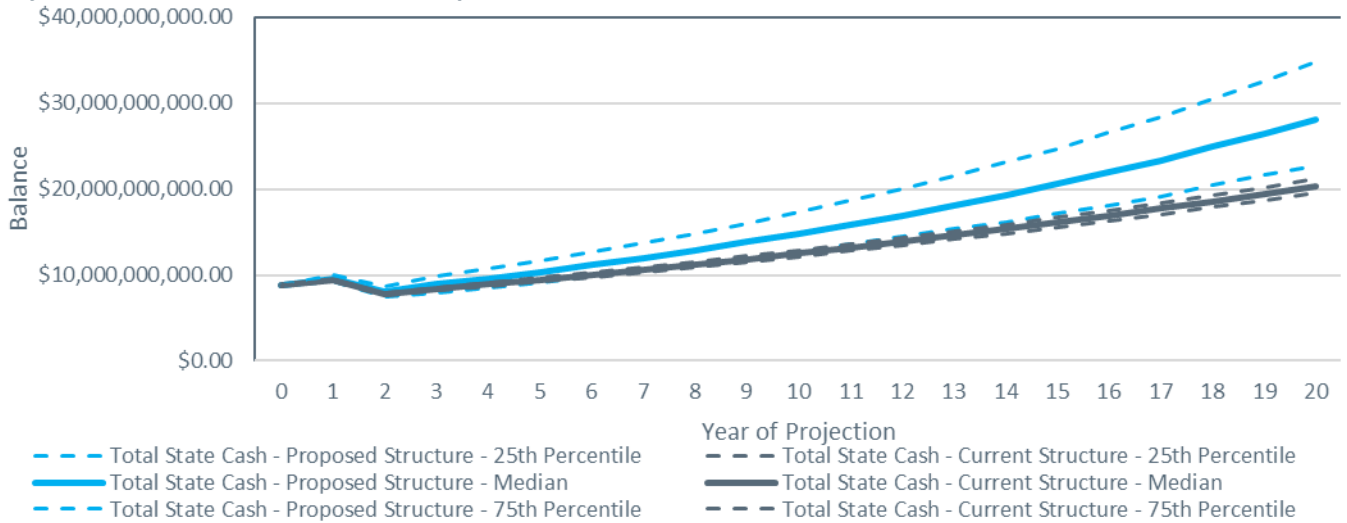
Further stressing the cash flows of the state, we also evaluate the outcome if the state had a net spend of 2.5% of the previous year’s ending balance. Under this scenario, albeit at lower total expected cash levels, we still observe relative strength for the proposed system as demonstrated in the exhibit below.

Projected Outcome Distributions – Proposed vs. Current Structure – 2.5% Net Cash Outflows



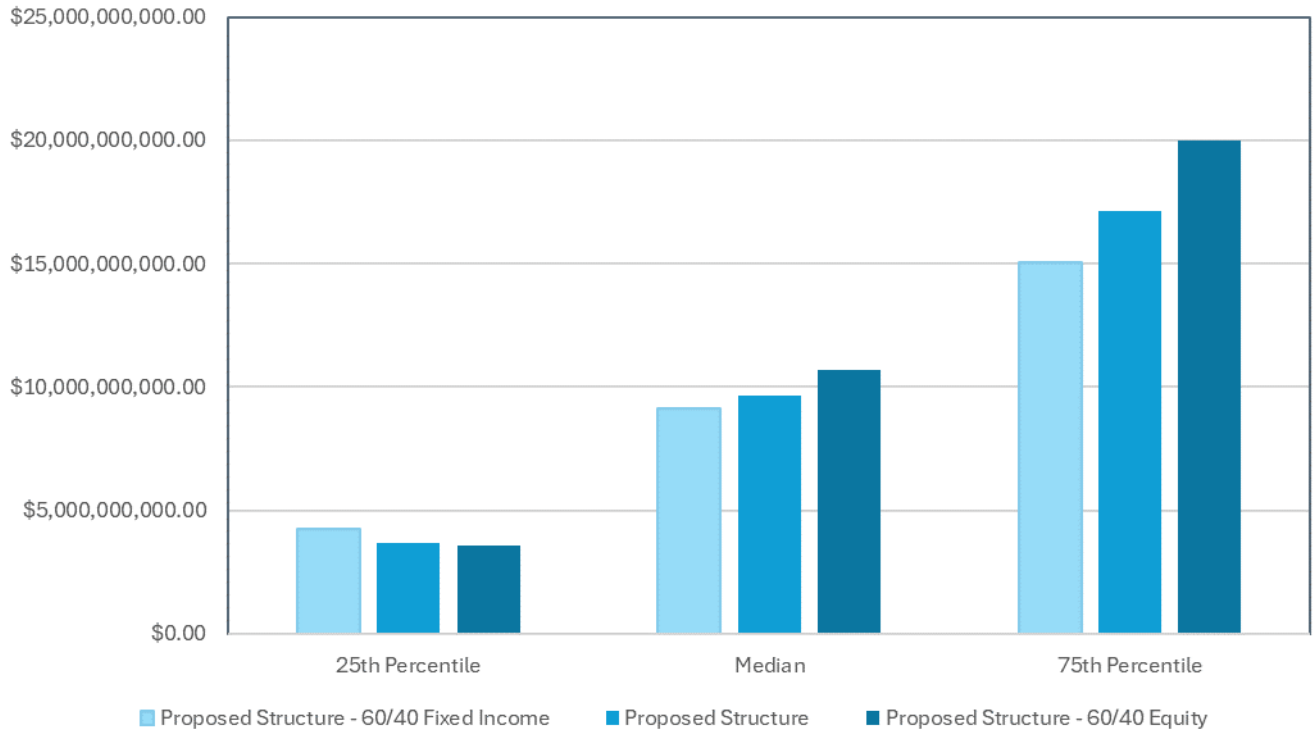
Lastly, given the temporarily heightened cash levels as a result of federal funds received in recent years, we evaluate the impact that cash outflow in year 2 of the projection would have on outcomes, stress testing the model with a \$2 billion dollar expenditure with cash flows otherwise unchanged. When compared to the baseline model, we see a modest improvement of the current structure outcomes relative to the 25th percentile and median outcomes of the proposed structure, however, the proposed portfolio still maintains material relative upside potential.

Projected Outcome Distributions – Proposed vs. Current Structure - \$2B Outflow in Year 2



In addition to evaluating the effect cash flows have on projected outcomes, we have stress tested the level of equity exposure present in the invested reserves increasing and decreasing the fixed income and equity allocations by 10 percent, reallocating between the US Aggregate bond exposure and US and International Equities. The exhibit below reflects the various outcomes as of year 20 of the projection relative to the current structure projected outcomes.

Projected Outcome Differentials – Proposed vs. Current Structure – Invested Reserves +/- 10% Equity



Under all forecasts conducted, we observe material improvements to the outcomes at or above median for the proposed structure relative to the structure currently in place for cash investment, while proposed structure 25th percentile outcomes consistently outperform their counterpart in the current structure projections.

IX. Recommendations

1. To follow best practices, ND needs a fully comprehensive cash management system that focuses exclusively on (1) a highly efficient treasury function; (2) a focused investment program managed by investment professionals accountable for the performance of the program; and (3) investing via a duration stratified strategy that ensures continuously sufficient liquidity and appropriately conservative credit quality, while maximizing investment returns to the state.
 - a. By “fully comprehensive,” we mean *all* operating/liquidity cash pools of the state and its agencies as well as all reserve fund assets inclusive of two of the largest reserve funds: the Budget Stabilization Fund (BSF) and the Strategic Investments and Improvement Fund (SIIF). This excludes any longer-term investment programs held in Trust for specific beneficiaries and those following an existing and well-articulated asset allocation policy (such as Pension Funds, Permanent School Funds, and other long-term portfolios such as the Legacy Fund). Under this framework, reserve funds’ cash would be pooled with other general fund cash and invested based on the recommended stratifications.
 - b. By “a highly efficient treasury function,” we mean a formally organized, statutorily mandated “top of the state” effort that systematically (1) moves cash instantly from inflow points to the cash investment pool and from the cash investment pool to points of disbursement; (2) directs and maintains a “forward-looking” forecasting system, with ongoing bottom-up input from all underlying “client” agencies, allowing maximum visibility of expected cash inflows and outflows; and (3) manages a systematic effort – using the cash and reserve asset balances and the forward-looking forecast of inflows plus a regularly revisited calculation of maximum expected cash drawdowns – to size, and periodically resize, the duration strata among the tiers in the investment pool.
 - c. By “investment professionals,” we mean a professional asset management function within the state’s organizational structure, with experience managing, either through internal or external managers (or both), multiple types of institutional asset portfolios ranging from very short-term cash equivalents to longer-term diversified multi-asset portfolios. The asset management function should provide to the state and all stakeholders robust reporting of performance relative to appropriate benchmarks with full transparency and accountability for results.
 - d. By “duration stratified investment strategy,” we mean a tiered portfolio structure for the comprehensive set of cash and reserves assets of the state of North Dakota. The portfolios should be tiered by investment horizon / liquidity needs. We recommend the following tiers for consideration:
 - i. **Tier 1 – Operating Cash.** This is all assets needed for daily operation of the state and composed of extremely high quality and very short duration fixed income / cash equivalents. Tier 1 operating cash will need to be linked to the state’s commercial banking accounts in a manner that provides daily liquidity for all balances and an automatic sweep feature so that the assets can earn the returns available from extremely short-term high-quality securities. Example – government money market

funds or similar. Potential benchmark – 90-day T-bills.

- ii. **Tier 2 – Liquid Reserves.** This provides a buffer between operating cash and invested reserves and is not anticipated to be drawn from on a daily basis yet provides a liquid backstop for periods of higher and/or unexpected liquidity needs. Remains highly liquid, high quality, and short duration to be available as needed, while also taking moderately more interest rate and credit risk than the Tier 1 Operating Cash portfolio. Example – ultra-short duration or short duration fixed income. Potential benchmarks – Bloomberg 0 – 1 Govt/Credit and/or Bloomberg 1-3 Year Govt/Credit.
 - iii. **Tier 3 – Invested Reserves.** This provides higher returns through broad diversification and moderate exposure to liquid risk assets beyond fixed income for assets not needed for Tier 1 or 2, and for which there is high confidence they will not be needed for liquidity purposes in the near or intermediate term. Invested reserves should continue to emphasize liquid assets. We recommend an asset allocation study and stress testing to determine the optimal policy allocation targets.
2. There is a strong case for having separate cash management strategies for the state’s operating cash assets and cash assets that are an integral part of the multi-asset class asset allocation applied to the state’s long-term reserve assets such as the Legacy Fund, Common Schools Trust Funds, Pension Funds, and others. As examples, the strategic nature of the Legacy Fund and Common Schools Trust Fund, and their objectives to generate long-term growth and perpetual income to the general fund and public schools, respectively, disincentives meaningful cash allocations. Preliminarily, funds that should clearly be excluded from the consolidated cash management structure include Public Employee Retirement System (PERS, 457 Plan, etc.), Legacy Fund, Common Schools Trust Funds, and ND College and University Funds.
3. The existence of multiple, separate cash pools, with similar principal protection and liquidity objectives, all primarily generating earnings for the general fund, creates unnecessary complexity for a consolidated cash management function and serves as an impediment to achieving a scale efficient, “top of the state” cash management system. We recommend consolidating reserve funds wherever there is a high degree of similarity of purpose – and the BSF and SIIF possess this characteristic. In contrast to the Legacy Fund and CSTF, the BSF and the SIIF are guided by shorter-term distribution needs and investment objectives biased towards principal protection and liquidity that fit ideally within the construct of a fully comprehensive cash management function.
4. The returns earned on the state’s cash and reserve assets (as well as the effectiveness of the treasury function alongside it) should be aggregated, measured, and monitored over time in a highly transparent manner, and utilized by the state with the same transparency to achieve whatever objectives the state feels are the highest priority for these funds.
5. The state cannot fully achieve the goals in recommendations numbers 1 through 3 above so long as the returns on the state’s operating cash assets are used as the primary financing mechanism of the Bank of North Dakota’s balance sheet. The current intermixing of the cash investment returns of the state’s operating cash assets and the BND’s capital base serves to make clear neither the financial performance of the 200 plus state funds that generate and use these cash assets nor the true financial performance of the Bank of North Dakota which uses them for an entirely different mission of in-state private bank support and other economic goals. Utilizing the Bank of North Dakota as the cash management investment vehicle also has potential for a

deleterious effect on the ability of the Bank to achieve its objectives, as returning capital to the state's coffers via dividend payments can have a destabilizing effect on the Bank's balance sheet. For these reasons we recommend a separation of the coupling of statewide cash management efforts and funding of the balance sheet for the Bank to pursue its objectives.

6. We recommend the engagement of an institutional custodial bank for the comprehensive cash management system. Many state governments leverage institutional custody banks to enhance efficiency and automation across various functions, including accounting, reporting, regulatory compliance, securities valuation, and securities lending. Additionally, custody banks provide a robust security layer for safekeeping assets. Implementing such services could meaningfully support the State Treasurer's office by freeing up internal resources for core treasury functions, streamlining workflows, and improving operational efficiency. In our judgment, this is a clear best practice.
7. The best agency in North Dakota State government in which a "highly efficient treasury function" should be lodged is the State Treasurer's office. This aligns with what we observe in both the public and private cash management peer structures. Doing so will require some moderate investment in professional capacity and software as well as policy changes directed at ensuring the treasury function is applied in comprehensive fashion across all state agencies. We recommend an intense focus on cash flow forecasting, aggregated within the Treasurer's office, and supported by all participating agencies utilizing a state-of-the-art Treasury Management System (TMS), as a key focus for this effort. We recommend a comprehensive review of professional capacity needs within the State Treasurer's office as well as potential TMS providers.
8. There are multiple places where the state might house the asset management function. The investment portfolios or tiers described above can be thought of as commingled or mutual fund-like investment strategy pools to be utilized by the State Treasurer's Office in their role as the chief treasury management agent of the state. These include the State Investment Board, Board of University and School Lands, the Bank of North Dakota, or the Treasurer's Office. There are pros and cons in considering each, but in our opinion wherever the state lodges responsibility for asset management, *the function must meet the same requirements*.
9. Assuming the state follows these recommendations, a more permanent source of capital that does not impinge upon and obfuscate the state's operating cash management effort will need to be created for the Bank of North Dakota. That capital base – like the capital base for all banks throughout the world – will need to be sized and configured to meet the specific mission the state charges the BND to perform. With its own capital base and operating like a true bank, there would be the added clarity and transparency to the state in assessing both the BND's financial performance and the economic outcomes it achieves for the state. There are many ways this can be accomplished, but recommendations for doing so are well beyond the scope of this project.
10. We recognize that seeking to implement some or all of these recommendations will necessitate revisiting the statutory mandate requiring all state deposits be held with the Bank of North Dakota. Maintaining the current structure and depository requirement could significantly hinder successful execution of these proposed changes. Other statutory modifications may be needed to allow risk tolerance that corresponds with the recommendation of tiering available cash investment by horizon and liquidity needs.

X. Proposed Next Steps Based on Recommendations

Proposed Framework for Next Steps

We recognize that full implementation of the recommendations in this report will likely take time and a number of additional studies and professional engagements to assist in the development of the structure required for successful execution and realization of the anticipated benefits to the State. As such, we recommend first working towards the establishment of a statutory framework that mandates the development of the comprehensive cash and reserve management program as detailed in this report. This will require a thorough review of existing statutes and other governing legislation to fully inform the drafting of the legislation required. To facilitate the development and implementation of the program, we have organized the activities into three primary categories: Treasury Management, Investment Management, and the Bank of North Dakota.

1. Treasury Management

An assessment of the current capabilities of the State Treasurers Office and the identification of staffing, skills, and treasury management systems required to develop and maintain a highly efficient Treasury function is required. We would strongly recommend the engagement of a highly qualified Treasury Management Consultant to conduct this assessment and make recommendations for the development of the Treasury function.

2. Investment Management

Once a determination is made for where the investment function is best placed within the State, we identify the following elements that will be needed for design and implementation of the investment program.

- a. Asset Allocation Study: A formal study should be conducted to determine target allocations and risk/return expectations for the Tier 3 assets. This analysis should be complemented by a review of the other investment Tiers to establish overall risk/return objectives for each Tier, as well as a comprehensive risk/return assessment for the combined investment portfolio.
- b. Policy and Procedures Development: Formal policies and procedures need to be developed to guide various treasury activities, including investment management, forecasting, monitoring, reporting, and more.
- c. Custody Bank Selection: Researching and selecting a third-party custody bank is important for enhancing specific functionalities within the cash management system. The ideal custodian will provide an additional layer of security, facilitate transitions of money into and out of the system, and enable transfers between investment Tiers based on Treasury instructions. Custody bank could be leveraged for overnight sweep function prior to Treasury directing funds to their respective investment tier.
- d. Investment Management Sourcing and Structure: An analysis of options for implementing the 3-tier cash management approach is required. This analysis should determine whether to utilize internal or external investment resources and culminate in manager selection and guideline development aligned with the system's investment risk and return objectives.

3. Bank of North Dakota

A study is needed to evaluate options for the transition of state deposits from the bank balance sheet and into the consolidated cash management program. There are some key elements to consider,

including the pace at which this transition occurs, and how the bank's balance sheet is best optimized without the State deposits to achieve its mission. We recommend the engagement of a consulting firm (or combination of firms) that specializes in funding sources and balance sheet optimization to help develop the best path forward for the Bank of North Dakota.

Appendices

RVK Team Biographies



Jim Voytko – President, Director of Research, Senior Consultant, Principal

Located in our Portland office, Jim serves as Director of Research and a Senior Consultant. Additionally, Jim served as RVK’s President and on our firm’s Board of Directors from 2008 to April 2024. He joined the firm in 2004 and has over 40 years of industry experience.

A sought after public speaker, Jim has delivered original presentations on various topics at numerous institutional investment conferences. He is involved in multiple aspects of RVK’s specialty consulting practices, most notably with asset/liability studies and board governance/investment program structural reviews. Jim’s research responsibilities are focused primarily on capital markets issues and investment decision-making.

Prior to joining RVK, Jim served as the CEO/Executive Director of Oregon’s statewide pension system for all employees at the state and local levels—including teachers, police and fire, and general staff as well as the Oregon 457 DC plan and health insurance plans. He also served as a member of the Oregon Investment Council, which is charged with investing all state funds—pension, workers compensation insurance, and others. His career includes several decades managing Wall Street research efforts, investment banking due diligence, and serving as CIO at a major private bank.

Jim earned his BA degree from Carnegie Mellon University, a Master of Public Administration degree from the University of Washington, and Master of Public Policy degree from Harvard University. Jim is a shareholder of the firm.



Josh Kevan, CFA– CEO – Elect, Senior Consultant, Principal

Josh is CEO-Elect and a Senior Consultant with RVK. He leads our Boise, Idaho office, and will step into the role of CEO in January 2025. Josh joined RVK in 2000 and has over 25 years of experience in investment consulting and capital markets. As a Senior Consultant, he advises a diverse mix of clients that include defined benefit plans, defined contribution plans, endowments and foundations, insurance companies, and other special purpose funds.

Josh earned a BA degree in Business from the University of Washington. He holds the Chartered Financial Analyst designation and is a member of the CFA Institute and the CFA Society of Idaho. Josh is a shareholder of the firm.



Beau Burggraft – Senior Consultant, Principal

Beau joined RVK in 1998 and is located in Bend, OR, supported by our Portland office. As a Senior Consultant, his role includes managing client relationships and consulting to a variety of the firm's pension, defined contribution, endowment and foundation, and corporate clients, as well as assisting on special projects for insurance industry clients.

Beau currently co-leads RVK's Insurance Group working to expand its internal resources and capabilities in servicing this client type. In this role, he is involved in the development of insurance specific tools and solutions for decision-making and optimizing portfolio outcomes, monitoring of evolving insurance-related investment issues, and participating in business development activities. Lastly, he engages the firm's Insurance Group in periodic education efforts by leveraging external experts on key insurance specific topics.

He earned his BS degree in Accounting from Linfield College and MBA, Finance Emphasis, degree from the University of Portland's Pamplin School of Business. Beau is a shareholder of the firm.



Dylan Crowover – Associate Consultant

Dylan joined RVK in 2016 and is located in our Portland office. As a member of our consulting team, Dylan works on a variety of projects including asset allocation studies, manager structure analyses, investment manager evaluation, client education presentations, and portfolio rebalancing.

He is a member of RVK's Capital Markets Team, the group responsible for setting the firm's capital markets assumptions and conducting various capital markets and investment research.

Dylan earned a BS degree from the University of Oregon with major concentrations in Economics and General Science, coupled with minors in Mathematics and Chemistry.



Michael Medzegian – Investment Associate

Michael joined RVK in 2021 and is an Investment Associate located in our Chicago office. His responsibilities include working with consulting teams on a variety of projects, such as asset allocation and manager structure analyses, client education presentations, and portfolio rebalancing.

Prior to joining RVK, Michael worked as a Loan Analyst at ACAP SME. He graduated from University of Oregon with a BS in Finance and a minor in Economics.

Jessica Goodall – Senior Executive Assistant

Jessica joined RVK in 2018 as a Senior Executive Assistant. She has over a decade of administrative experience, with recent roles including Special Project Assistant to the executives of Carondelet Health Network and Executive Assistant to the VP of Human Resources at Harvard University.

Jessica holds a Master of Arts in Professional Writing from New England College as well as a BA in English from Central Washington University.

Cortney Palmer – Senior Executive Assistant

Cortney joined RVK in 2023 as an Executive Assistant/Office Manager in our Boise office.

Prior to RVK, she did in-house and freelance graphic design for eight years and was an operations manager for three years. In a recent role with Revolutionary Tribes, she did executive assistant and project management work for a dental leadership consulting start-up. Cortney graduated with a BS in Business Communications from Utah State University.

Alexandra Goroch – Senior Administrative Assistant

Located in our Portland office, Alexandra joined RVK in 2021 as a Senior Administrative Assistant.

Prior to RVK, Alexandra has two decades of administrative and teaching experience, most recently as a Business English instructor and office management for a career training center in California. She holds a BA in Foreign Language/French and a Master of Arts in Secondary Education.