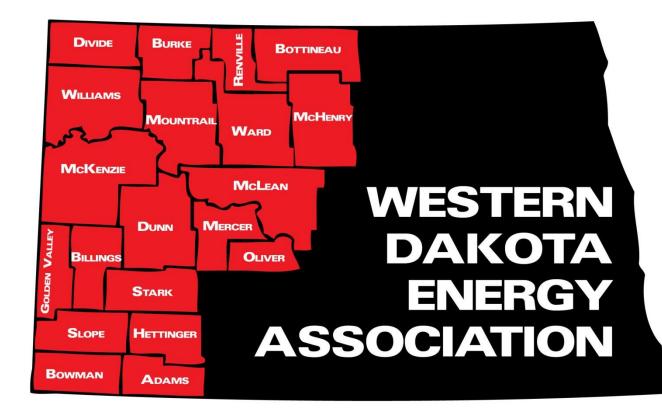
# Six Cities Impacts Forecasting

# **Executive Summary**

### January 9, 2017

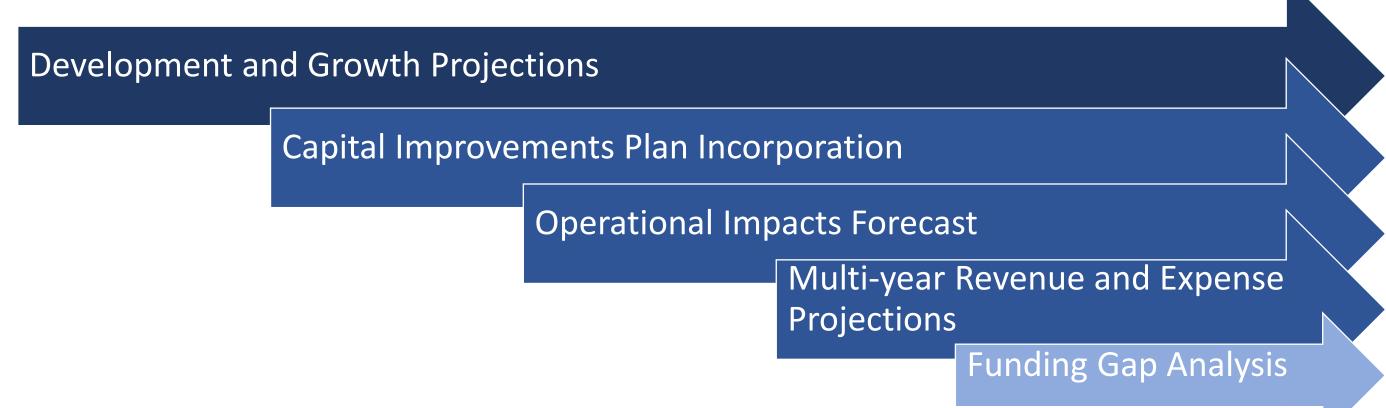






## **STUDY SCOPE**

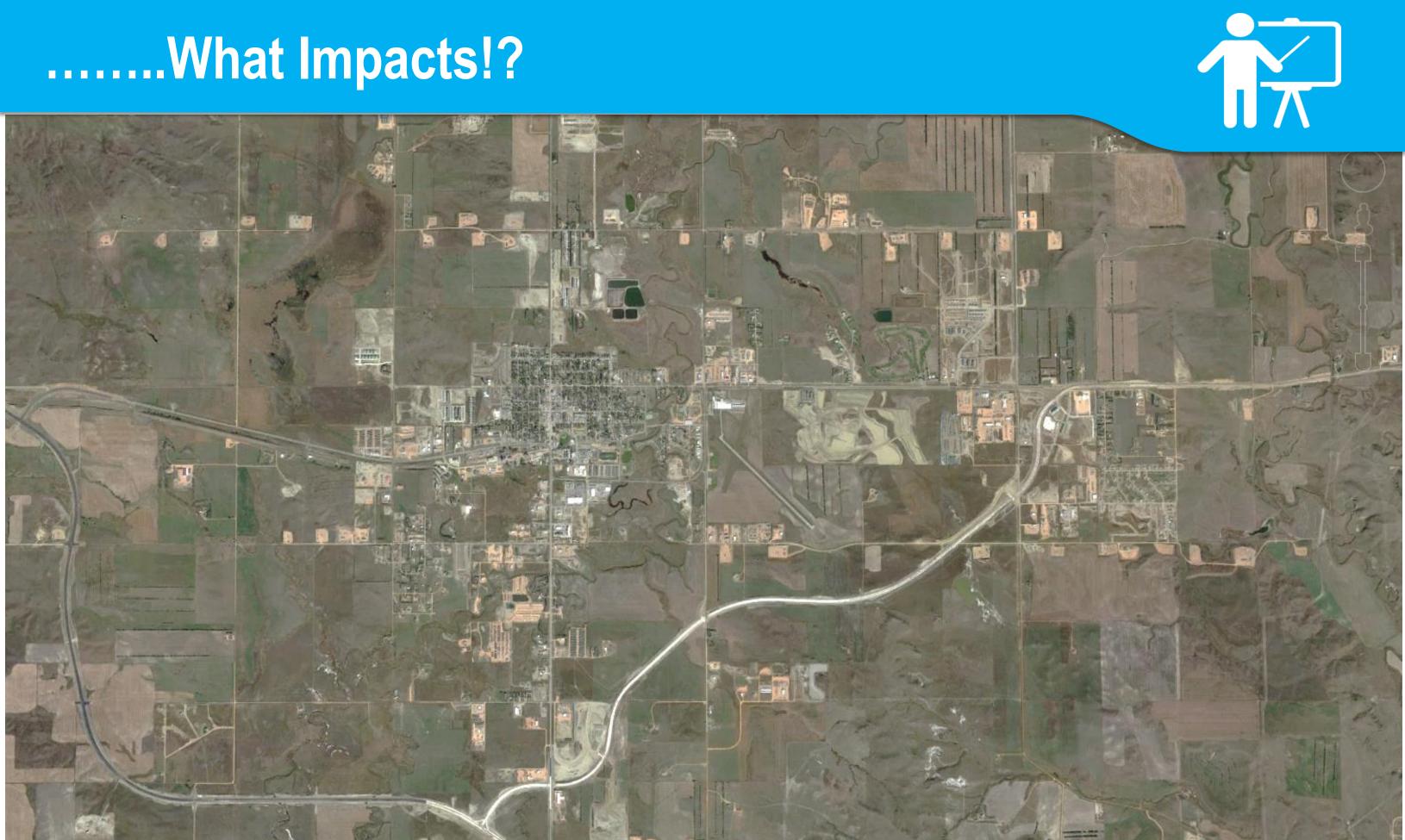
- Study Funded 50/50 by WDEA and Participating Cities
- Impacts Forecasts for Six Participating Cities Williston | Watford City | Dickinson | Tioga | Stanley | Killdeer
- Further projected population increases are expected to place additional service demands on each city
- Impacts to include the expansion of infrastructure and operations that will be required to meet the needs of each community.







Watford City – August 2009



Watford City – September 2014

# NDSU POPULATION AND WORKFORCE STUDY

- Impacts forecasting based on adaptations from workforce and population analyses performed by North Dakota State University with support by WDEA through VisionWest ND
- NDSU Study Focused on County-level Economic Activity in the Region and Effect on Workforce and Population through 2040



JOBS

PEOPLE

**OIL PRICE** 





### HOUSING

# **COUNTY LEVEL POPULATION PROJECTIONS**

NDSU STUDY SCENARIOS								
PRICE RANGE 1 PRICE RANGE 2 PRICE RANGE 3								
OIL ACTIVITY SCENARIO	OIL ACTIVITY SCENARIO	OIL ACTIVITY SCENARIO	OIL ACTIVITY SCENARIO	OIL ACTIVITY SCENARIO	OIL ACTIVITY SCENARIO	OIL ACTIVITY SCENARIO	OIL ACTIVITY SCENARIO	OIL ACTIVITY SCENARIO
	2	В		2	В	1	2	3

NDSU PRESENTED SCENARIOS						
LOW PRICE MEDIUM ACTIVITY	MODERATE MEDIUM PRICE MEDIUM ACTIVITY	HIGH PRICE MEDIUM ACTIVITY				

### What Will this Mean in the Near-Term for these **Cities**?

- Scenario analyzed for 6-**Cities Impacts Forecasting** was considered a moderate return to energy development in Western ND
- WTI oil prices starting near \$50/bbl in early 2017 and growing to near \$70/bbl by 2020





## **COUNTY LEVEL POPULATION PROJECTIONS Moderate Price Scenario**

County	2010	2015	2016	2017	2018	2019	2020	2021	2022	2023	Projected County Growth Rate
Williams	22,398	35,294 <b>9.5%</b>		33,030 to 2015 G	33,954 rowth Rat	34,905 .e	35,883	36,887	37,920	38,982	2.8%
McKenzie	6,360	12,826 <b>15.1%</b>	-	11,282	11,575	11,876	12,185	12,502	12,827	13,160	<b>2.6%</b>
Mountrail	7,673	10,331 <b>6.1%</b>	-	10,027	10,277	10,534	10,797	11,067	11,344	11,628	<b>2.5%</b>
Dunn	3,536	4,646 <b>5.6%</b>		4,500	4,604	4,710	4,818	4,929	5,042	5,158	2.3%
Stark	24,199	32,154 <b>5.8%</b>	-	31,253	32,159	33,092	34,051	35,039	36,055	37,101	2.9%

From NDSU VisionWest webinars supported by WDEA.



## **COUNTY to CITY POPULATION PROJECTIONS Moderate Price Scenario**

Participating City	2010	2015*	2016	2017	2018	2019	2020	2021	2022	2023	Projected City Growth Rate
Williston	14,716	26,997	26,668	27,415	28,182	28,971	29,783	30,616	31,474	32,355	2.8%
% Share of County** ->	66%	76%	83%	83%	83%	83%	83%	83%	83%	83%	
Watford City	1,744	6,708	6,598	7,333	7,871	8,313	8,651	9,001	9,364	9,739	5.7%
	27%	52%	60%	65%	68%	70%	71%	72%	73%	74%	
Stanley	1,458	2,721	2,641	2,707	2,878	2,950	3,239	3,320	3,517	3,605	4.5%
	19%	26%	27%	27%	28%	28%	30%	30%	31%	31%	
Tioga	1,230	2,400	2,249	2,312	2,377	2,443	2,871	2,951	3,034	3,119	4.8%
	5%	7%	7%	7%	7%	7%	8%	8%	8%	8%	
Killdeer	751	1,254	1,232	1,260	1,335	1,366	1,445	1,479	1,563	1,599	3.8%
	21%	27%	28%	28%	29%	29%	30%	30%	31%	31%	
Dickinson	17,787	23,765	22,779	23,440	24,441	25,150	26,220	26,980	28,123	28,938	3.5%
	74%	74%	75%	75%	76%	76%	77%	77%	78%	78%	

\*2015 County and City values based on "American Community Survey 2015 Population Estimate" \*\*State-wide, Metros range between 69 percent and 88 percent of County populations



# **CITY POPULATION PROJECTIONS**

## **Population Projections Summary**

### Williston

21%

Growth by 2023

Additional Population of 5,700 by 2023

### Dickinson

27%

Growth by 2023

Additional Population of 5,500 by 2023

Tioga 39%

Growth by 2023

Additional Population of 800 by 2023

# Watford City

## 48%

Growth by 2023

Additional Population of 2,400 by 2023

Killdeer 30%

Growth by 2023

Additional Population of 340 by 2023

**Stanley** 

36%

Growth by 2023

Additional Population of 960 by 2023







## **OPERATIONAL IMPACTS**

- Operational levels were analyzed based on key metrics of population, utility accounts, horizontal infrastructure miles expansion, and new vertical facility needs.
- Road mile projections based on average road mile per unit population 2013 – 2015.
- Similarly, future projections of utility accounts based on average population per water account from 2013 – 2015

Participating City	Road Miles Growth by 2023	2013-2015 Average Road Miles per 1,000 Population
Williston	23%	7.5
Dickinson	19%	6.4
Watford City	56%	9.0
Stanley	37%	13.9
Tioga	41%	9.0
Killdeer	32%	11.0

Participating City	Account Growth by 2023	2013-2015 Population per Utility Account
Williston	23%	4.0
Dickinson	28%	2.9
Watford City	56%	3.7
Stanley	38%	2.2
Tioga	38%	2.5
Killdeer	33%	2.0



# **GROWTH METRICS and BENCHMARKING**

- Regional Benchmarking Analysis was Completed to Make Future 6-Cities Service Level Projections
- Analysis evaluated operational levels of service from communities similar in size to long-term growth trajectory of participating cities
- Forecasting Operational levels based on similar metrics of:
  - Population Served
  - Comparable Departmental Structures
  - **Utility Service Accounts Administered**
  - Horizontal Infrastructure Miles Maintained
  - Vertical Facilities Operated

Population & housing projections along w/ forecasted metrics form the core of City Impact Forecasts





# BENCHMARKING

 Regional analysis looking at operational levels of service from communities similar in size to long-term growth trajectory of participating City's:

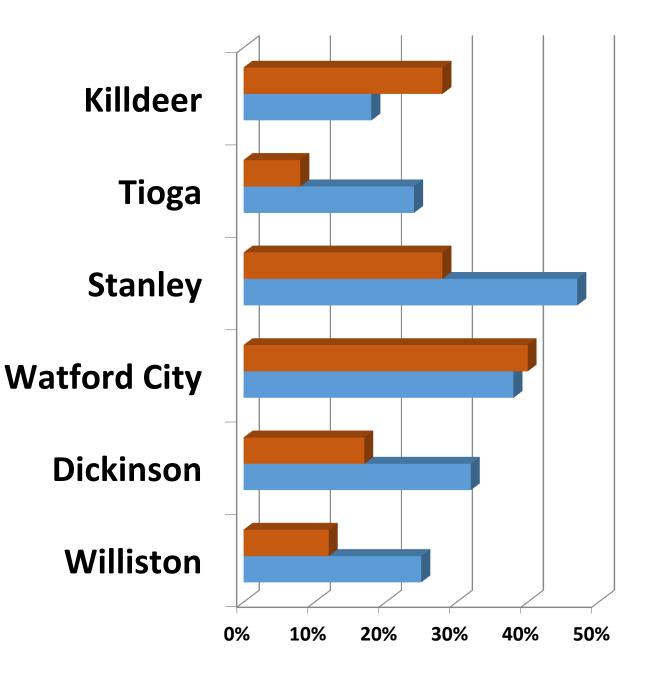
	Benchmark Communities					
Large (Williston/Dickinson)	Mid-Size (Watford City)	(Sta				
West Fargo, ND	Grafton, ND					
Gillette, WY	Valley City, ND					
Bozeman, MT	Devils Lake, ND					
Minot, ND	Wahpeton, ND					
Grand Forks, ND	Yankton, SD					
	Jamestown, ND					



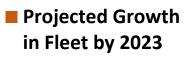
**Small** anley/Tioga/Killdeer) Mayville, ND Langdon, ND Rugby, ND Grafton, ND Valley City, ND

# **PROJECTED OPERATIONAL DEMANDS**

- Operational demands continue to grow in the form of municipal employee needs and fleet purchase needs
- The Benchmarking Analysis highlighted further Significant Needs in the Areas of Staff and Fleet are likely

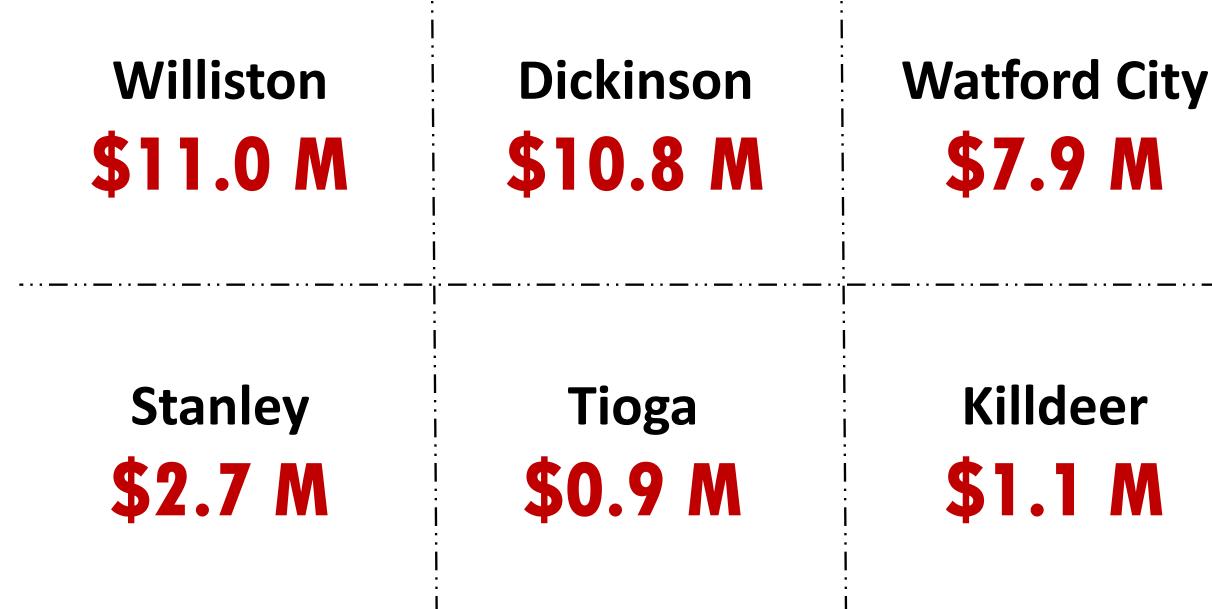






#### Projected Growth in Staff by 2023

# **Projected Incremental New Annual Operating Costs by 2023\***



\*Above 2017 Budget Levels



# **MAJOR INFRASTRUCTURE NEEDS**

#### Williston

- Front end of \$260M Airport Replacement
- Trunk Transportation and Corridor Improvements
- Further Water/Sewer Extensions and Water Storage Improvements
- Public Works Facility Expansion

#### Dickinson

- Trunk Sewer Expansion for further Northside Development
- Trunk Water Transmission and Storage Improvements for further Northside Development
- Water and Sewer Extensions to Airport
- Event Center Development

#### Watford City

- Trunk Infrastructure Corridor Expansion
- Wastewater Service to Southwest Quadrant of the City
- Water System Looping to Round-out Major Extensions for Fire Protection and Redundancy
- Municipal Airport Improvements Including Runway Expansion

Participating City
Williston
Dickinson
Watford City



#### Total Identified Infrastructure Needs 2017-2023

#### \$650M

\$213M

#### \$390M



# **MAJOR INFRASTRUCTURE NEEDS**

#### **Stanley**

- Implementation of Mechanical Wastewater Treatment to Meet Projected Capacity Demands
- Bypass and Frontage Road Improvements to Accommodate Increased Industry Activity Around City
- City Hall Replacement to Accommodate increased
  Administrative Needs
- Recreational Improvements, Including Indoor Rec Center and Trail System Expansion

Participating C	Ci
Stanley	
Tioga	
Killdeer	

#### Tioga

- Main Street Extension and Expansion
- Stormwater Controls and Detention to Mitigate Urban Flooding Issues
- Water and Wastewater Trunk Extensions to Key Identified Growth Areas

#### **Killdeer**

- Wastewater Lagoon Expansion
- Major Water and Sewer Trunk Upsizing
- Stormwater Controls to Minimize Urban Flooding Issues



ity	Total Identified Infrastructure Needs 2017-2023
	\$90M
	\$100M
	\$56M



## **CURRENT REVENUE IMPACTS**

- Major Revenue Collections Have Been Down Significantly through Recent Slowdown
- 2014 versus 2016 Collections on Average for 6-Cities:





# What will Projected Growth Mean for Major **Revenues in Each City?**

### Gross Production Tax

- Examining Current Formula and Upcoming Reversion
- Specific to Moderate Price Forecast and Production Levels

### City Sales Tax

 Analyzing Growth in Sales Tax Revenue Considering Population Increases, Building Activity, and Industry Activity

### Property Tax

 Projecting Taxable Value and Resulting Property Tax **Revenue Based on Building Activity Forecasts** 

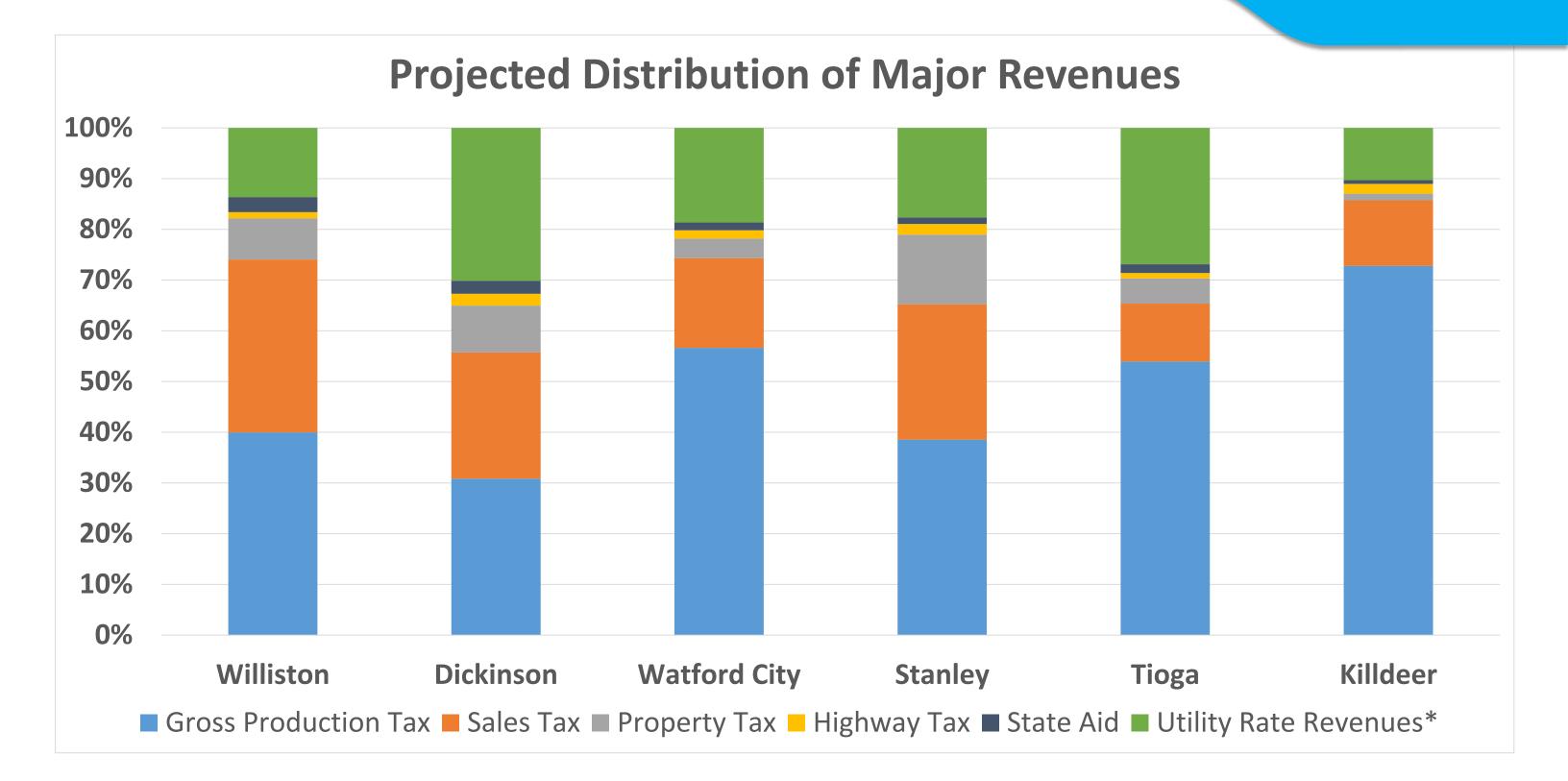
### Utility Services

 Projected Revenue Growth from Account Growth and Usage Characteristics tied to Metrics





## **Major Revenues for the Six Cities**





## **Gross Production Tax:\***

## Williston

## 19%

Growth by 2023

Projected GPT Revenue of \$34.7M by 2023

## **Stanley**

71%

Growth by 2023

Projected GPT Revenue of \$3.8M by 2023

### Dickinson

9%

Growth by 2023

Projected GPT Revenue of \$18.1M by 2023

Tioga

132%

Growth by 2023

Projected GPT Revenue of \$5.1M by 2023

## Watford City

# 86%

Growth by 2023

Projected GPT Revenue of \$19.9M by 2023

> Killdeer 95%

> > Growth by 2023

Projected GPT Revenue of \$8.4M by 2023

\*Based on current formula with production increase from 0.9M bbl per day to \$1.2M bbl per day and price increasing from \$50 per bbl (WTI) in 2017 to \$80 per bbl (WTI) by 2023





## **City Sales Tax:**

## Williston

## 76%

Growth by 2023

Projected Sales Tax Revenue of \$30.1M by 2023

### **Stanley**

58%

Growth by 2023

Projected Sales Tax Revenue of \$2.4M by 2023

### Dickinson

44%

Growth by 2023

Projected Sales Tax Revenue of \$14.8M by 2023

Tioga

12%

Growth by 2023

Projected Sales Tax Revenue of \$0.9M by 2023

# Watford City

42%

Growth by 2023

**Projected Sales Tax Revenue of** \$5.4M by 2023

> Killdeer 25%

> > Growth by 2023

**Projected Sales Tax Revenue of** \$1.2M by 2023





## **Property Tax:**

## Williston

## 48%

Growth by 2023

Projected Property Tax Revenue of \$7.6M by 2023

### **Stanley**

63%

Growth by 2023

Projected Property Tax Revenue of \$1.3M by 2023

## Dickinson

20%

Growth by 2023

Projected Property Tax Revenue of \$5.3M by 2023

Tioga

32%

Growth by 2023

Projected Property Tax Revenue of \$0.4M by 2023

## Watford City

40%

Growth by 2023

Projected Property Tax Revenue of \$1.2M by 2023

Killdeer

Projected Property Tax Revenue of \$0.1M by 2023





25%

Growth by 2023

## **Utility Rate Revenues:**

## Williston

## 19%

Growth by 2023

Projected Utility Rate Revenue of \$11.3M by 2023

### **Stanley**

33%

Growth by 2023

Projected Utility Rate Revenue of \$1.6M by 2023

### Dickinson

14%

Growth by 2023

Projected Utility Rate Revenue of \$15.3M by 2023

Tioga

32%

Growth by 2023

Projected Utility Rate Revenue of \$2.2M by 2023

## Watford City

32%

Growth by 2023

Projected Utility Rate Revenue of \$4.5M by 2023

> Killdeer 41%

> > Growth by 2023

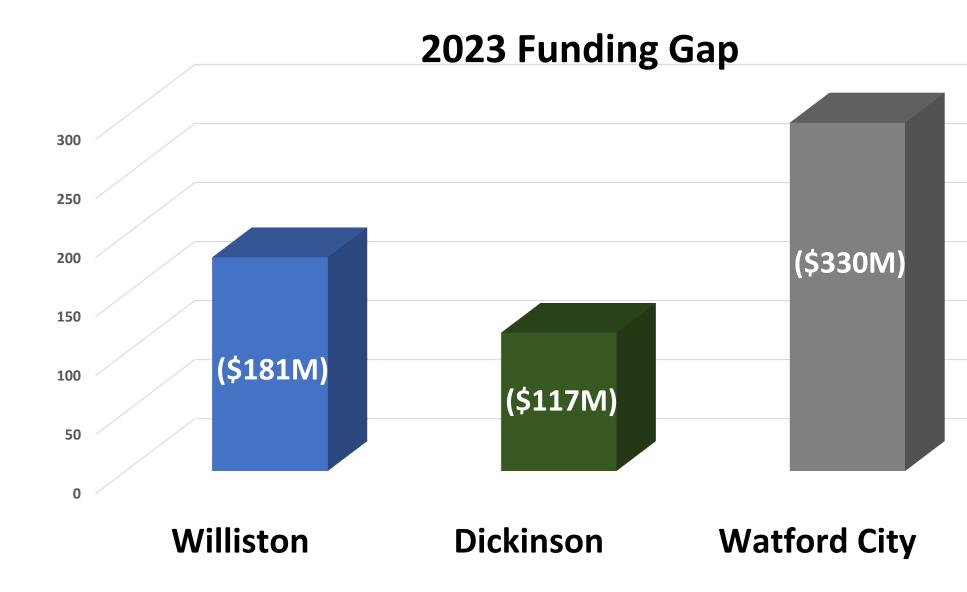
Projected Utility Rate Revenue of \$0.9M by 2023





# **Total Cash Funding Gap Results**

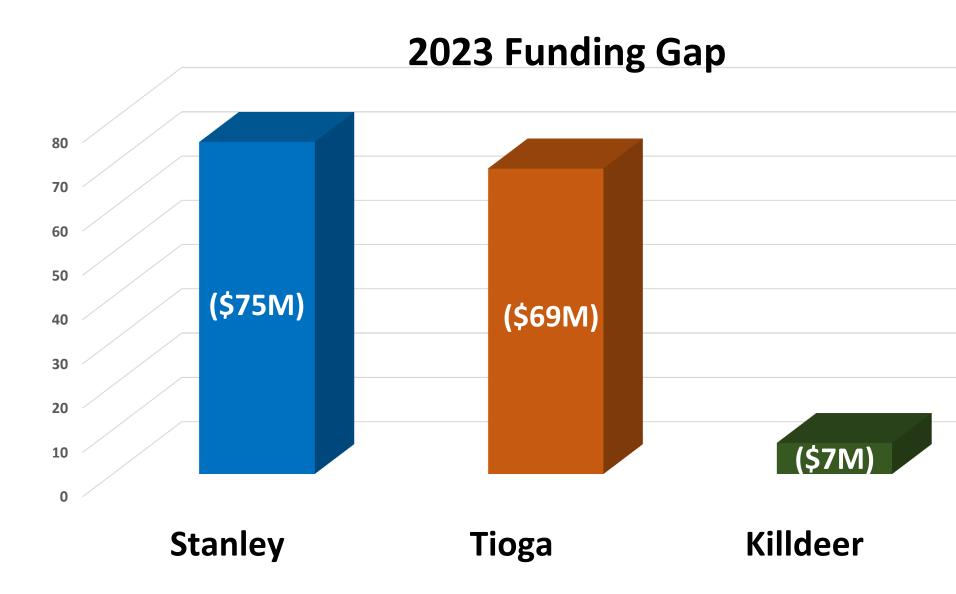
Given all projected revenues and expenditures and application of preliminarily identified infrastructure funding sources, total 2023 funding gaps were projected for each City





# **Total Cash Funding Gap Results**

Given all projected revenues and expenditures and application of preliminarily identified infrastructure funding sources, total 2023 funding gaps were projected for each City

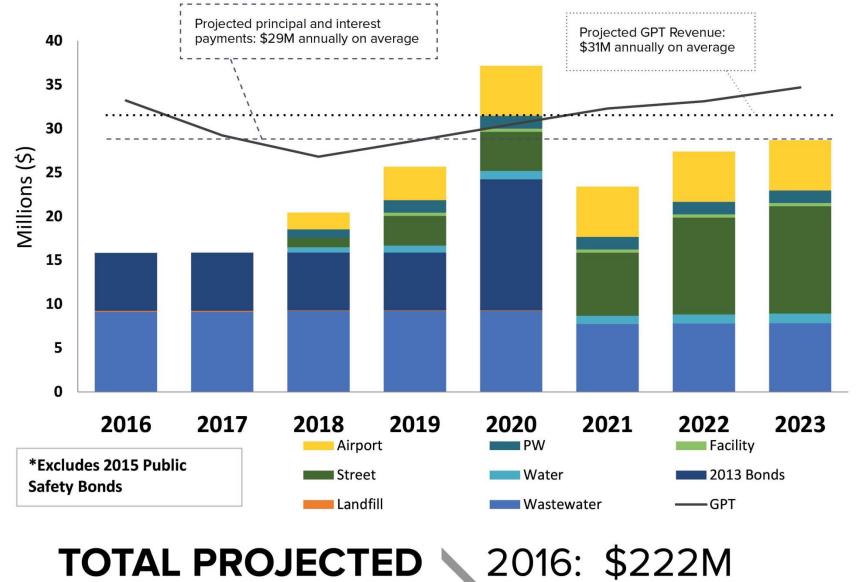




# **DEBT PROFILING - WILLISTON**

#### ANNUAL PRINCIPAL AND INTEREST (EXISTING AND NEW) VERSUS GPT REVENUE

Given the total capital funding needs identified, an illustrative debt profile was developed if the City were to access typical debt instruments for all projected projects in excess of \$1M dollars.



#### TOTAL PROJECTED 2016: \$222M DEBT LOAD 2023: \$417M



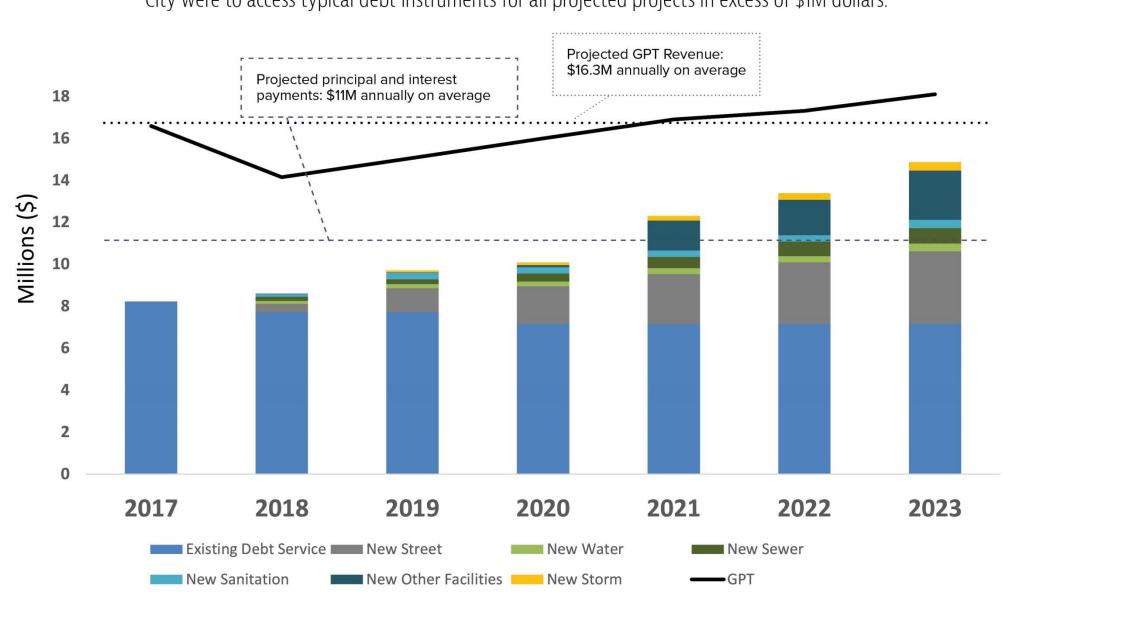
# **DEBT PROFILING - DICKINSON**

TOTAL PROJECTED

**DEBT LOAD** 

### **ANNUAL PRINCIPAL AND INTEREST (EXISTING AND NEW) VERSUS GPT REVENUE**

Given the total capital funding needs identified, an illustrative debt profile was developed if the City were to access typical debt instruments for all projected projects in excess of \$1M dollars.



2016: \$89.1M

2023: \$201M

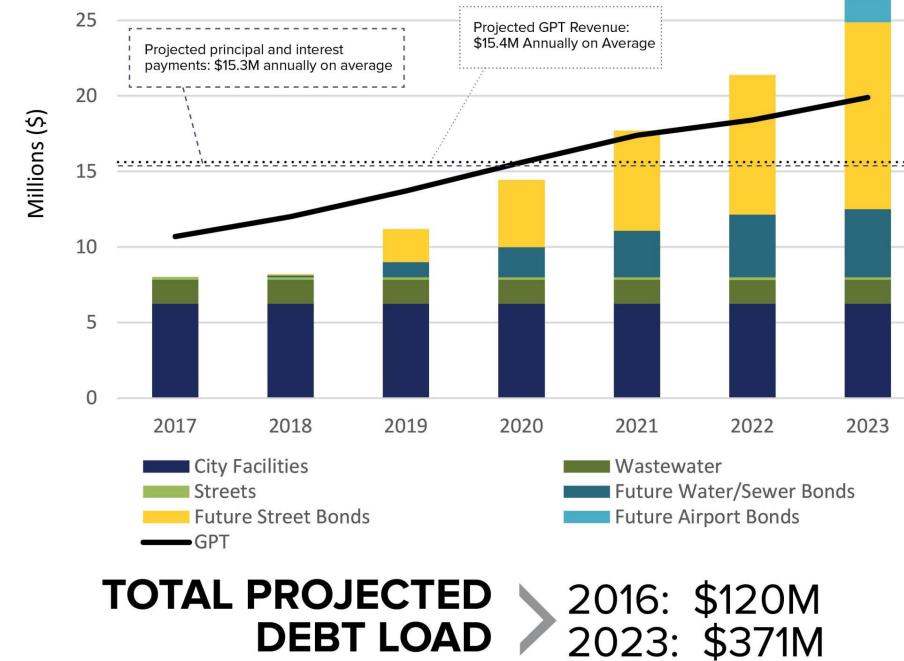




# **DEBT PROFILING – WATFORD CITY**

#### **ANNUAL PRINCIPAL AND INTEREST** (EXISTING AND NEW) VERSUS GPT REVENUE

Given the total capital funding needs identified, an illustrative debt profile was developed if the City were to access typical debt instruments for all projected projects in excess of \$1M dollars.





## **KEY STUDY TAKEWAYS**

- 1. Past investments by the State and each City in trunk infrastructure has positioned Western communities for further growth
- 2. Moderate oil price recovery will bring further large level of service demands for Cities in the Bakken
- 3. Although a moderate oil price recovery is expected to significantly increase City revenues, the rebound in revenues is not projected to meet anticipated needs





## **KEY STUDY TAKEWAYS (Cont.)**

- 4. Cities will remain heavily dependent on major revenue sources such as GPT to offset projected demands
- 5. Further unique funding and financing strategies will be required to fill the total funding gaps projected
- 6. Future funding and financing strategies will require solutions at both the local and state level





### Thank You for Your Interest Regarding the Anticipated Impacts for these Western Cities!



# **Questions?**

Geoff Simon WDEA Executive Director Geoff@ndenergy.org 701.527.1832

Shawn Gaddie, PE

**AE2S Nexus General Manager** 

Shawn.Gaddie@ae2s.com 701.746.8087





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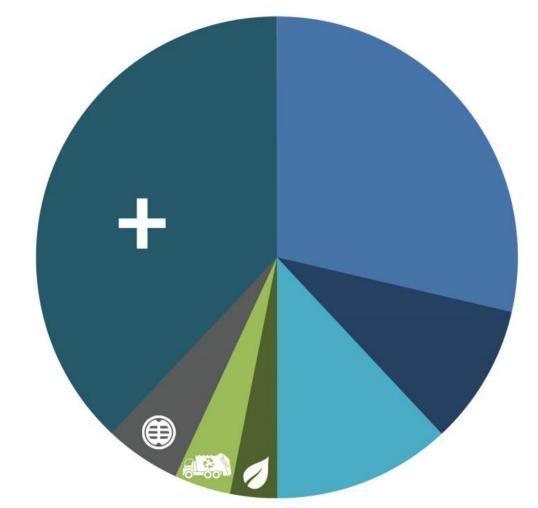
# **CIP NEEDS - DICKINSON**

### **CAPITAL IMPROVEMENT NEEDS**

CATEGORY	Year (Estimated Costs in Millions)						
	Total 2017-2023 Project Costs	Less Prelimina Assigned Fund Sources	Remaining				
Transportation	\$61.0	\$0.0	1	\$61.0			
Wastewater	\$20.0	\$0.0		\$20.0			
Water	\$25.4	(\$15.2)	2	\$10.2			
Parks	\$6.7	\$0.0		\$6.7			
Sanitation	\$8.1	\$0.0		\$8.1			
Stormwater	\$10.8	\$0.0		\$10.8			
Other Facilities/Admin	\$80.9	\$0.0		\$80.9			
Totals	\$212.9	\$(15.2)		\$197.7			

#### **Preliminary Identified Funding Sources**

- 1. State Projects Shown at Local Cost-Share Level
- 2. State Water Commission Funding on Applicable Water Projects



#### **Key Capital Needs**

- •





Water/Sewer Extensions to Airport

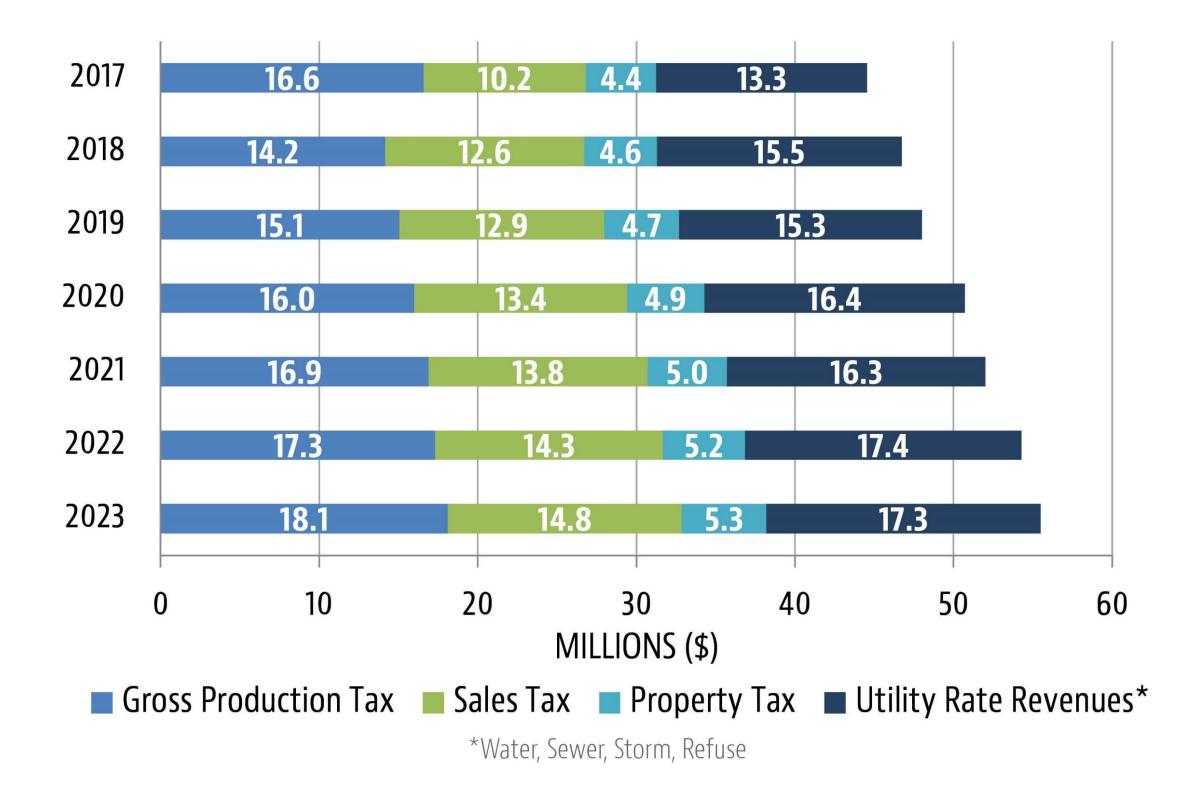
Events Center Development

Trunk Sewer Expansion for Further Northside Development

Trunk Water Transmission and Storage Improvements for Further Northside Development

# **REVENUE - DICKINSON**

### **MAJOR REVENUE SOURCE PROJECTIONS**





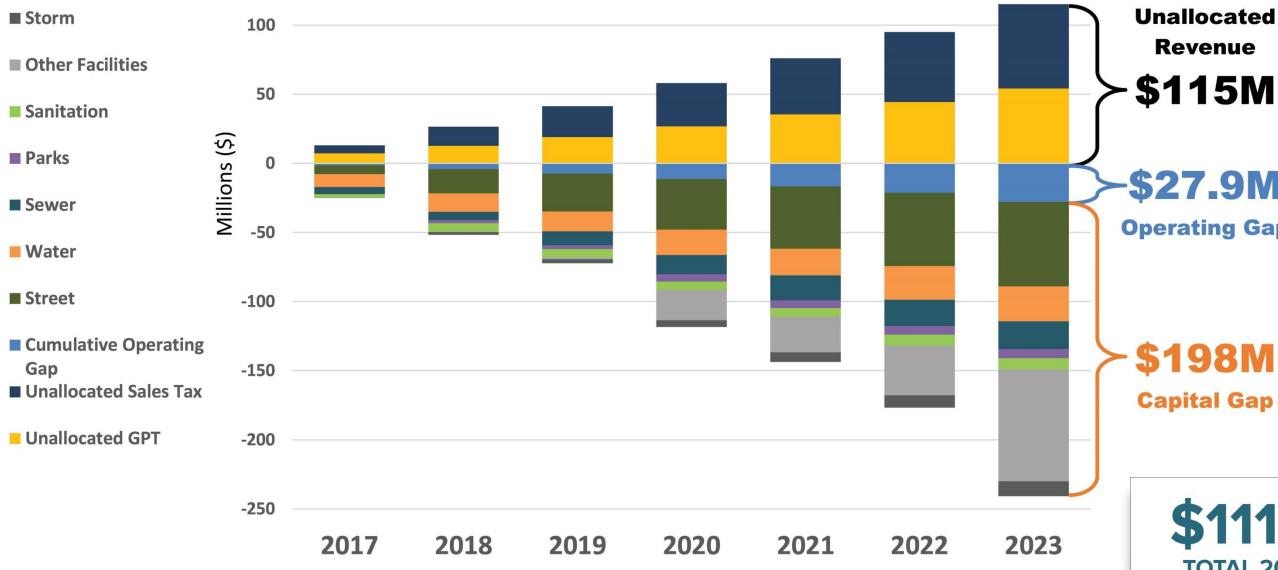


# **FUNDING GAP - DICKINSON**

#### **FUNDING GAP OF \$111M PROJECTED BY 2023**

Given all projected revenues and expenditures, application of preliminary infrastructure funding sources, and cash funding of remaining capital projects, a total 2023 net funding gap of \$111M has been identified.

#### **CASH BASED FUNDING GAP ANALYSIS**



### **TOTAL 2023 FUNDING GAP**

#### \$198M **Capital Gap**

#### \$27.9M **Operating Gap**

## \$115M

Revenue



# **CIP NEEDS - KILLDEER**

### **CAPITAL IMPROVEMENT NEEDS**

CATEGORY	Year (Estimated Costs in Millions)					
	Total 2017-2023 Project Costs	Less Prelimina Assigned Fund Sources		Remaining		
Transportation	\$9.80	\$0.00		\$9.80		
Wastewater	\$18.20	(\$6.70)	2	\$11.50		
Water	\$24.80	(\$12.90) 1,2		\$11.90		
Stormwater	\$3.40	\$0.00		\$3.40		
Totals	\$56.2M	(\$19.6M)		\$36.6M		

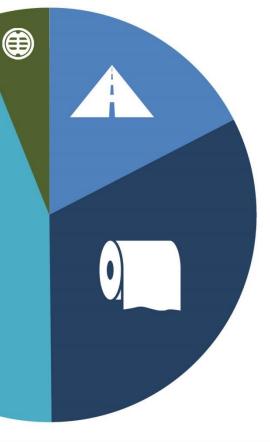
#### **Preliminary Identified Funding Sources**

- 1. State Water Commission Funding on Applicable Water Projects
- 2. Special Assessments and Developer Funded

### **KEY CAPITAL NEEDS**

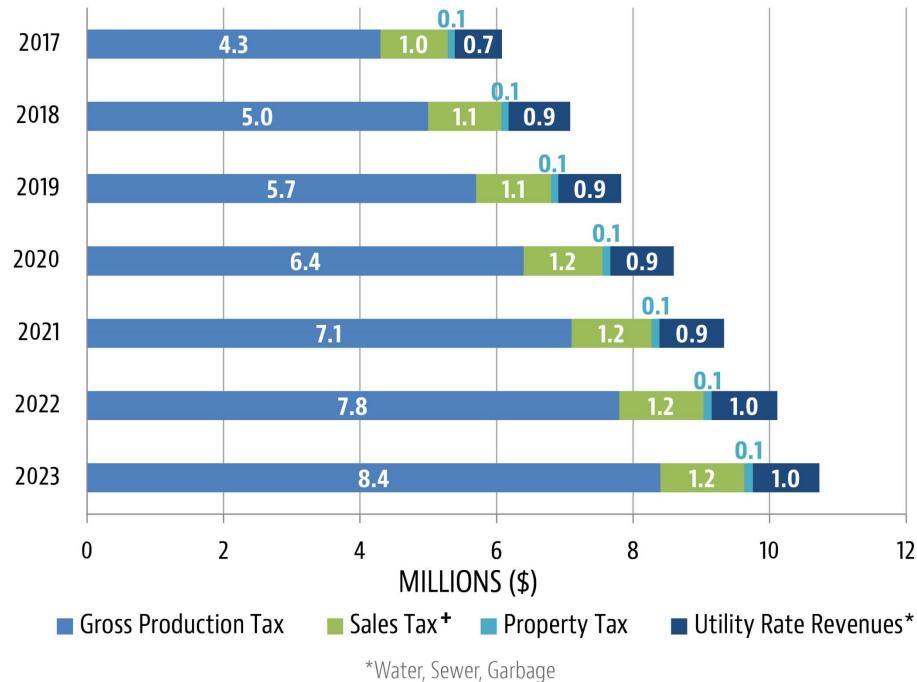
- Wastewater Lagoon Expansion is Top Infrastructure Priority
- Major Water and Sewer Trunk Upsizing is Needed to Serve Growth  $\mathbf{\Sigma}$
- Stormwater Control Designed to Minimize Urban Flooding





# **REVENUE - KILLDEER**

### **MAJOR REVENUE SOURCE PROJECTIONS**



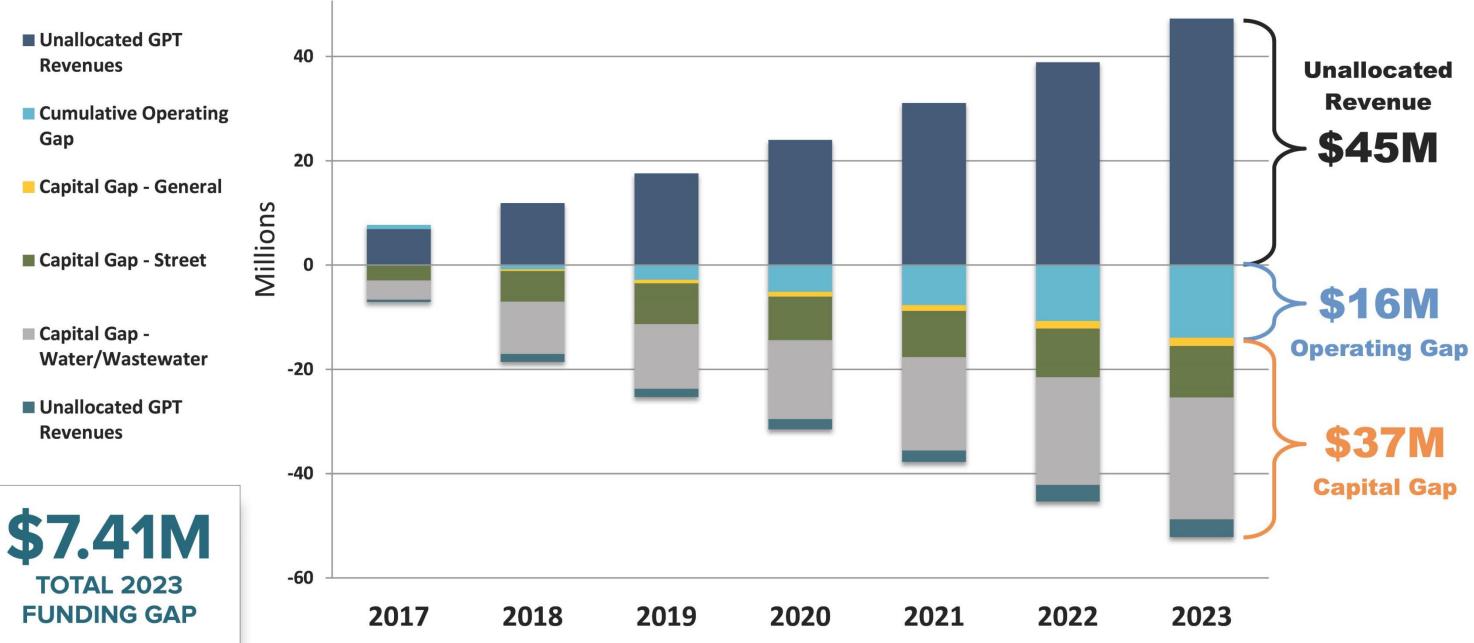
+Sales Tax Dedicated to City Pool and Parks







## **FUNDING GAP – KILLDEER**





#### **CASH BASED FUNDING GAP ANALYSIS**

# **CIP NEEDS - STANLEY**

#### **CAPITAL IMPROVEMENT NEEDS**

CATEGORY	Year (Estimated Costs in Millions)			
	Total 2017-2023 Project Costs	Less Preliminary Assigned Funding Sources		Remaining
Transportation	\$36.5	(\$3.5)	2	\$33.0
Wastewater	\$16.0	(\$2.1)	2	\$14.0
Water	\$4.0	(\$3.5)	1,2	\$0.5
Stormwater	\$1.3			\$1.3
Landfill	\$4.0			\$4.0
Other Facilities/Admin	\$27.9			\$27.9
Totals	\$90M	(\$9M)		\$81M



#### **Preliminary Identified Funding Sources**

1. State Water Commission Funding on Applicable Water Projects

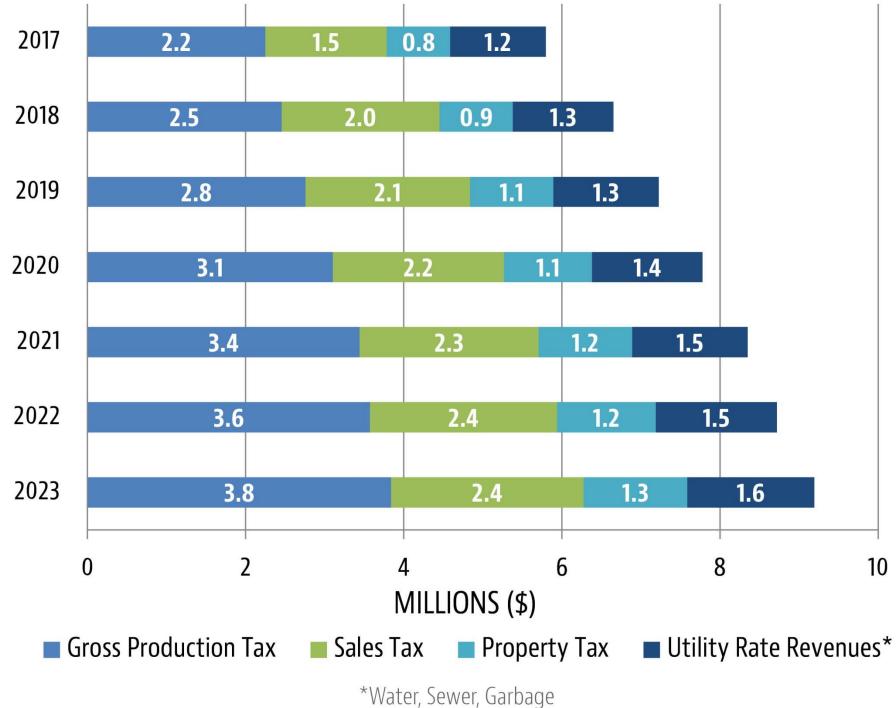
2. Special Assessments on Applicable Projects

## **KEY CAPITAL NEEDS**

- Implementation of Mechanical Wastewater Treatment to Accommodate Further Population Growth
- Bypass and Frontage Road Improvements to Accommodate Truck Traffic Around the City
- Recreational Improvements, Including an Indoor Recreation Center and Trail System  $\mathbf{\Sigma}$ Expansion
- City Hall Replacement to Accommodate Growing Administrative Needs of the City  $\mathbf{\Sigma}$



## **REVENUE - STANLEY**

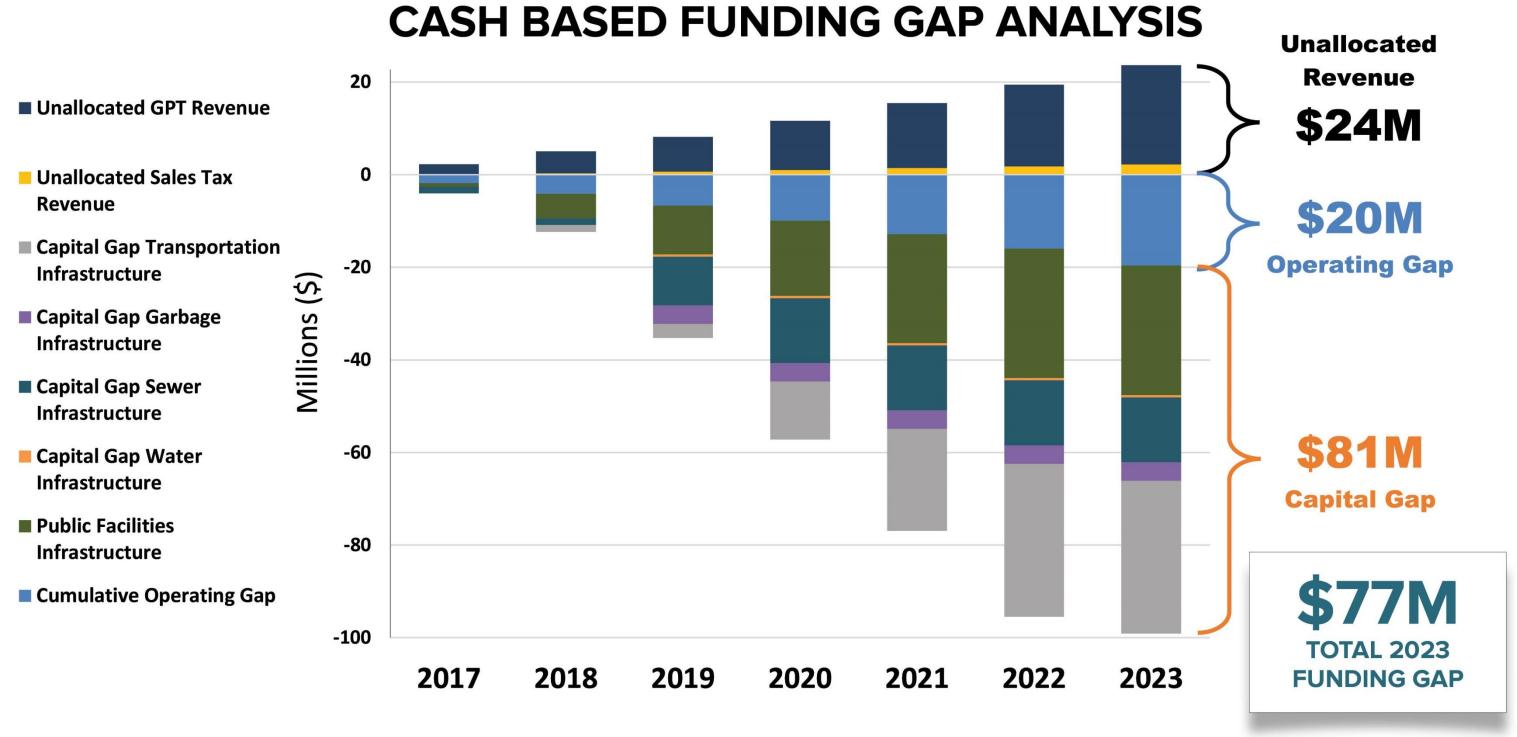








## **FUNDING GAP – STANLEY**





# **CIP NEEDS - TIOGA**

### **CAPITAL IMPROVEMENT NEEDS**

CATEGORY	Year (Estimated Costs in Millions)			
	Total 2017-2023 Project Costs	Less Preliminary Assigned Funding Sources		Remaining
Transportation	\$30.0	\$0.0		\$30.0
Wastewater	\$14.0	\$0.0		\$14.0
Water	\$8.2	(\$4.9)	1	\$3.3
Stormwater	\$17.0	\$0.0		\$17.0
Other Facilities/Admin	\$30.7	\$0.0		\$30.7
Totals	\$99.9M	(\$4.9M)		\$95.0M



#### **Preliminary Identified Funding Sources**

1. State Water Commission Funding on Applicable Water Projects

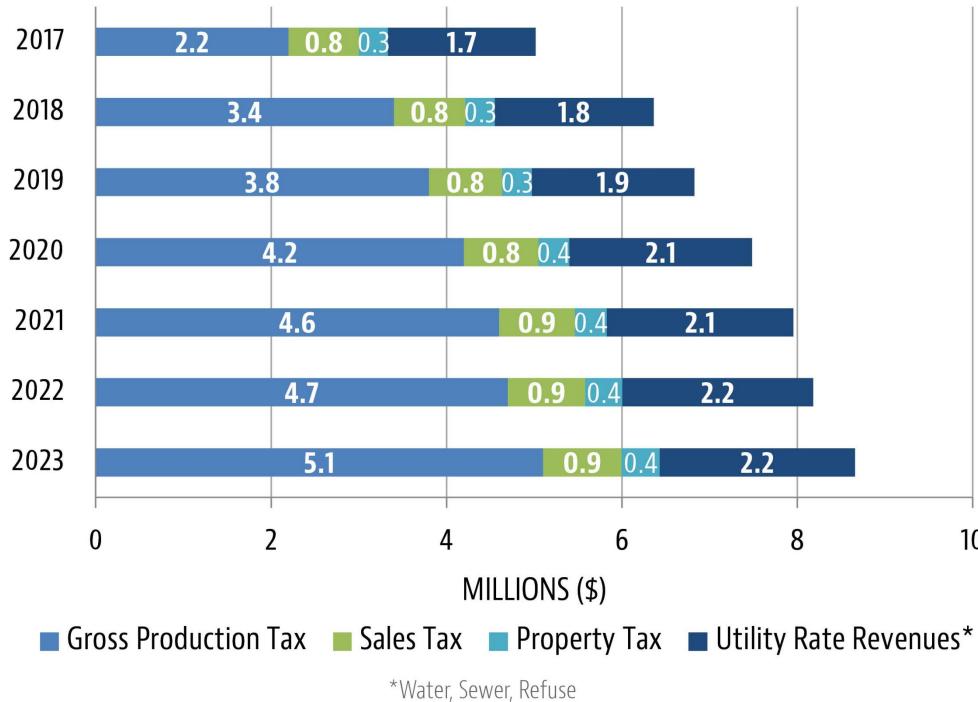
## **KEY CAPITAL NEEDS**

- Main Street Extension and Expansion to Handle Increased Traffic
- Stormwater Controls and Detention to Combat Urban Flooding
- Water and Wastewater Trunk Extensions to Key Growth Areas





## **REVENUE - TIOGA**



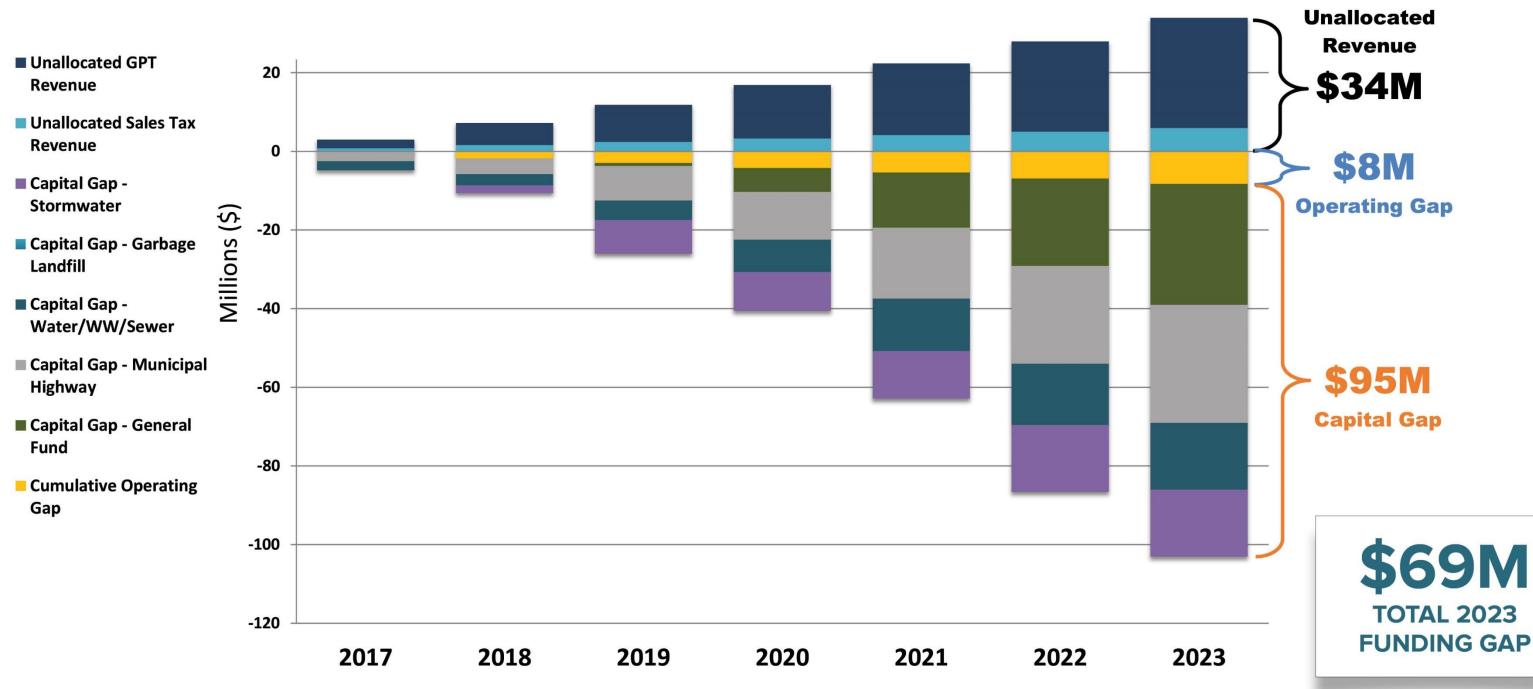






## **FUNDING GAP – TIOGA**

### **CASH BASED FUNDING GAP ANALYSIS**





# **CIP NEEDS – WATFORD CITY**

## **CAPITAL IMPROVEMENT NEEDS**

CATEGORY	Year (Estimated Costs in Millions)			
	Total 2017-2023 Project Costs	Less Preliminary Assigned Funding Sources		Remaining
Transportation	\$205.0	(\$20.5)	2	\$184.5
Wastewater	\$98.0	(\$9.8)	2	\$88.2
Water	\$61.8	(\$37.1)	1,2	\$24.7
Stormwater	\$4.0			\$4.0
General/Airport	\$21.2			\$21.2
Totals	\$390.0M	(\$67.40M)		\$322.6M



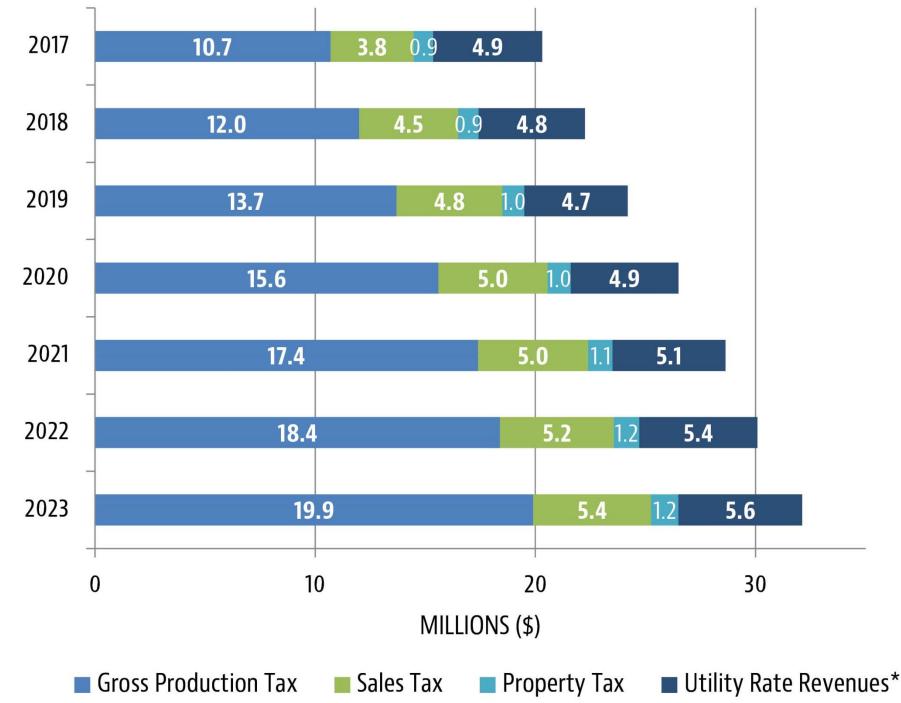
- 1. State Water Commission Funding on Applicable Water Main Projects
- 2. Special Assessments on Applicable Projects



#### **Key Capital Needs**

- Trunk Infrastructure Corridor Expansion (11th Ave S, 17th Ave N, 14th St W, 12th St E)
- Wastewater Service to Southwest Quadrant of the City for Unsewered and Expected New Customers
- Water System Looping to Round Out Major Extensions for Fire Protection and Redundancy
- Municipal Airport Improvements, Including Runway Expansion

## **REVENUE – WATFORD CITY**



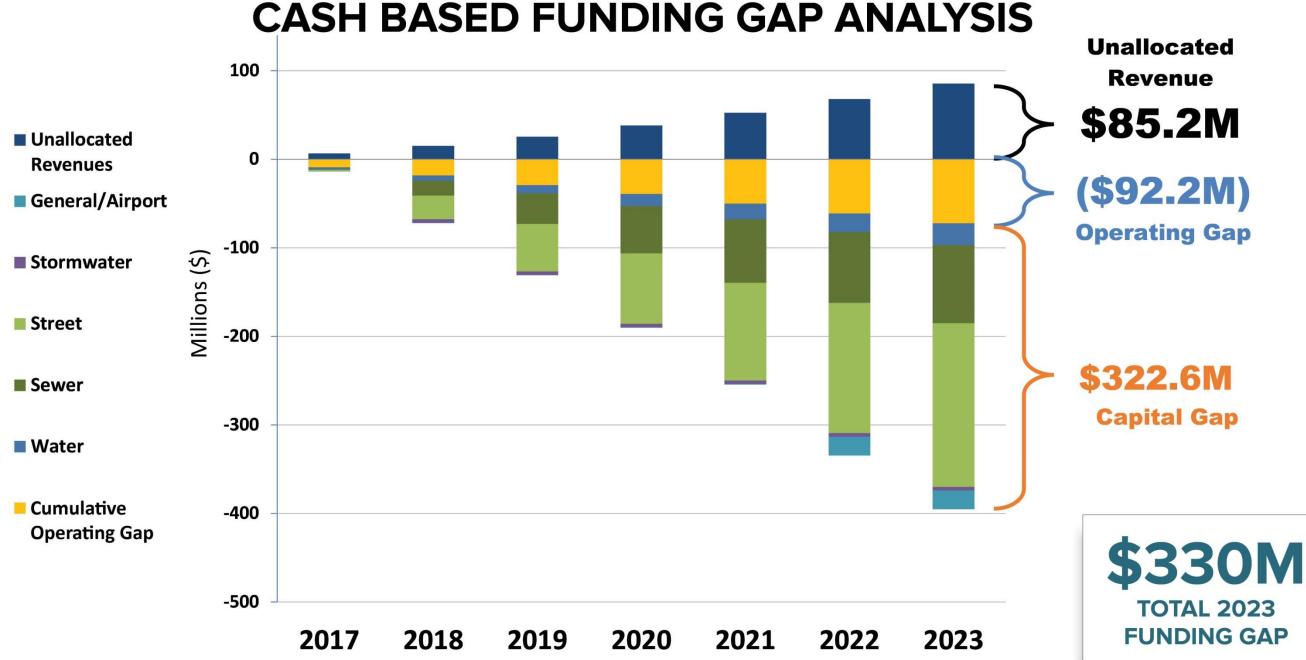




## FUNDING GAP – WATFORD CITY

### FUNDING GAP OF \$330M PROJECTED BY 2023

Given all projected revenues and expenditures, application of preliminarily identified infrastructure funding sources, and cash funding of remaining capital projects a total 2023 funding gap of \$330M has been identified.





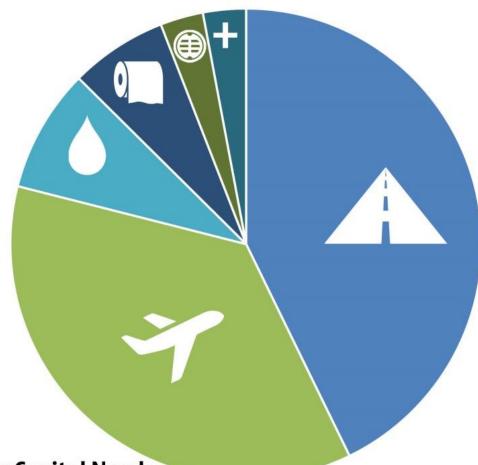
# **CIP NEEDS – WILLISTON**

### **CAPITAL IMPROVEMENT NEEDS**

CATEGORY	Year (Estimated Costs in Millions)			
	Total 2017-2023 Project Costs	Less Preliminary Assigned Funding Sources		Remaining
Transportation	\$283.74	(\$138.90)	3,4	\$144.85
Wastewater	\$44.27	(\$36.49)	1,3	\$7.78
Water	\$56.20	(\$34.10)	2,3	\$22.10
Stormwater	\$5.98	(\$2.60)	3	\$3.38
Airport	\$240.00	(\$180.00)	5	\$60.00
<b>Other Facilities/Admin</b>	\$19.55	(\$0.20)	3	\$19.35
Totals	\$650M	(\$393M)		\$257M

#### **Preliminary Identified Funding Sources**

- 1. SRF Loan backed by GPT Revenue for WRRF
- 2. State Water Commission Funding on Applicable Water Projects
- 3. Special Assessments on Applicable Projects
- 4. State (SOI & Urban) Funding on Applicable Transportation Projects
- 5. FAA & NDAC Grant Funds



#### **Key Capital Needs**

- Access



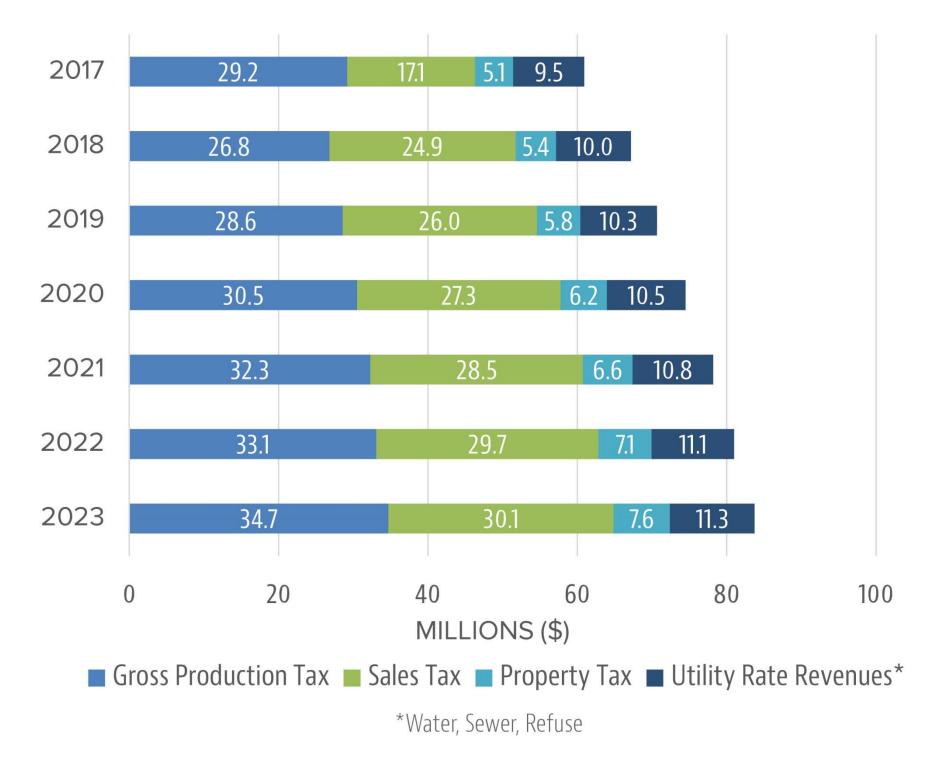
Major Airport Replacement Project and Associated Redevelopment of Existing Sloulin Field

Trunk Transportation Corridor Expansions into Future Growth Areas of the City, Including Improved Airport

 Water/Sewer Extensions and Water Storage Improvements for Future Growth Areas of the City

 Public Works Facility Expansion to Accommodate Significant Staff and Fleet Growth

## **REVENUE – WILLISTON**

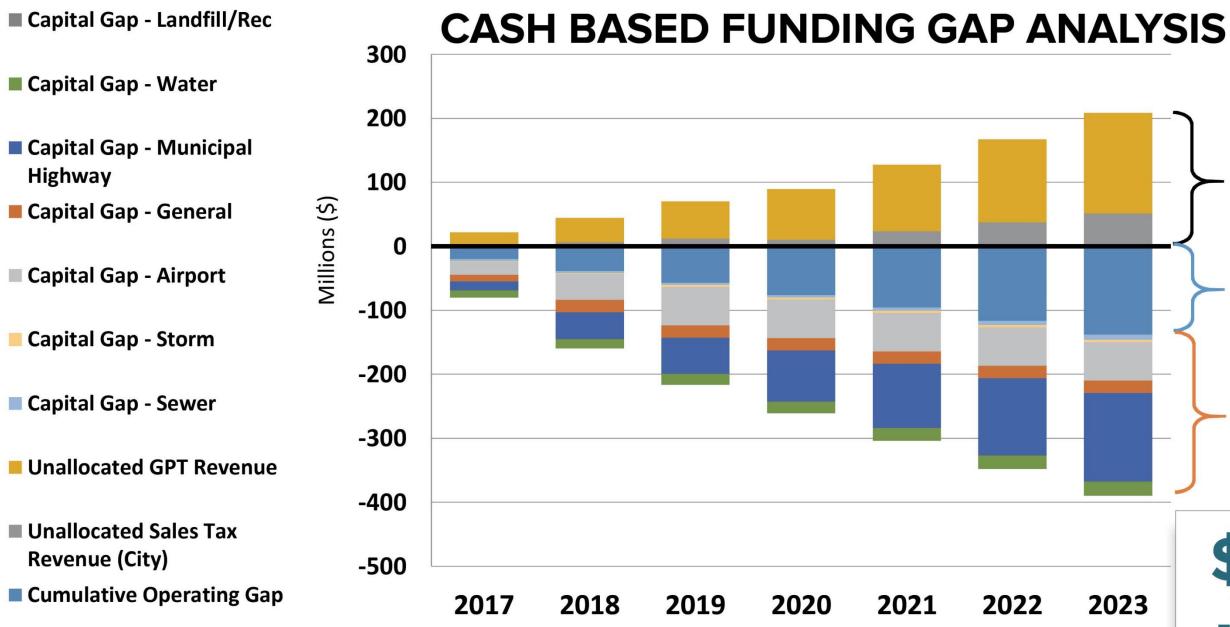




## **FUNDING GAP - WILLISTON**

### FUNDING GAP OF \$181M PROJECTED BY 2023

Given all projected revenues and expenditures, application of preliminary infrastructure funding sources, and cash funding of remaining capital projects a total 2023 funding gap of \$181M has been identified.





Unallocated Revenue

#### \$208M



Operating Gap



#### **81M TOTAL 2023 FUNDING GAP**