



Policy Analysis of Dubuque's Green Alley Reconstruction Project

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IOWA

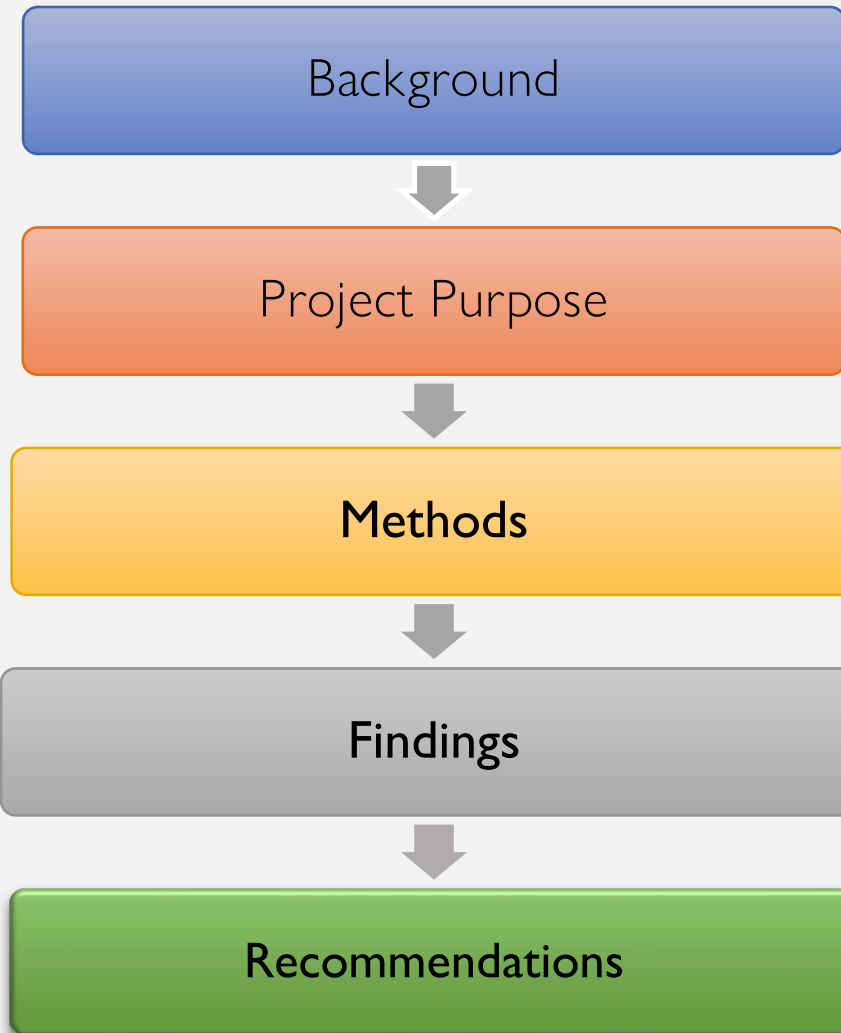
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and Public Affairs

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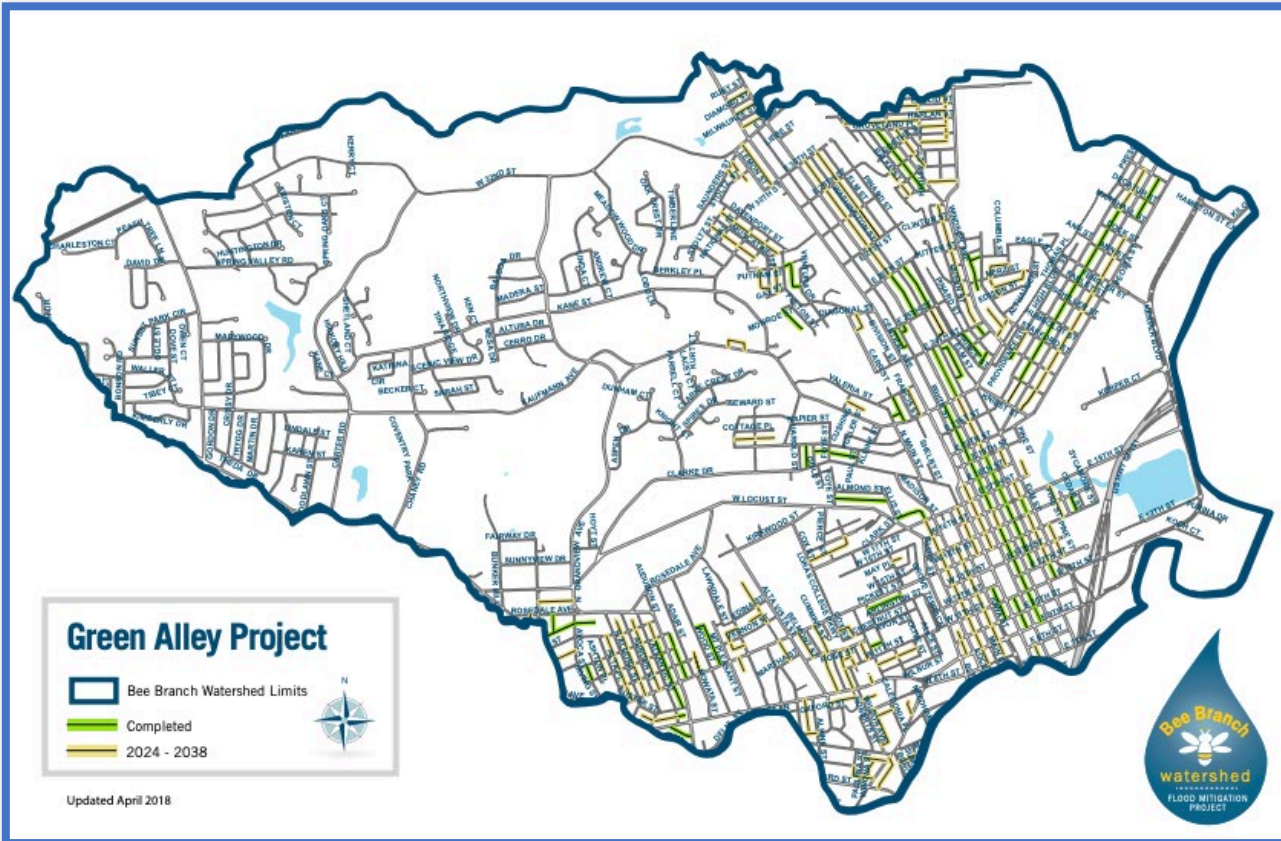
Initiative for Sustainable
Communities

THE CITY OF
DUBUQUE
Masterpiece on the Mississippi

Presentation Outline



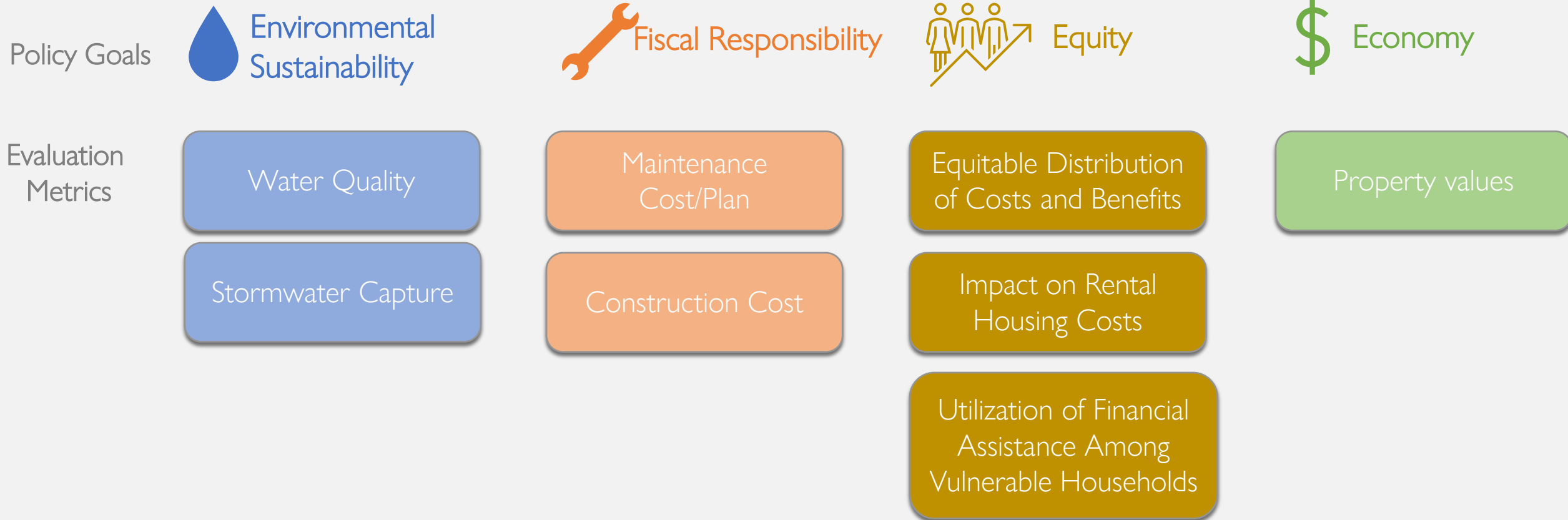
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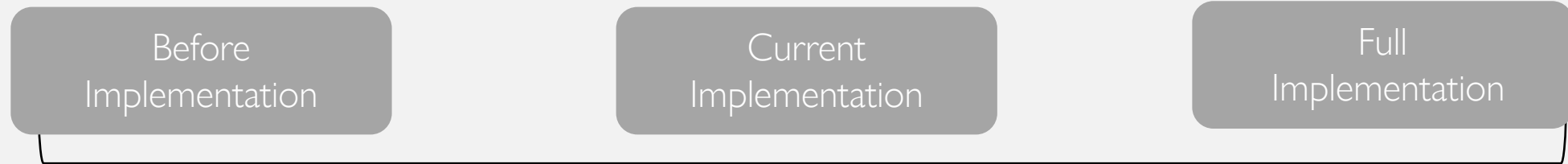
Project Purpose

By conducting a **policy analysis** of the permeable paver system practices, we can inform the City of Dubuque of the impact of green alleys on **mitigating flooding** & improving **water quality** while also considering the effects of the policy from an **equity** and **economic** standpoint.

Methods



Methods



Policy Goals

Environmental Sustainability

Fiscal Responsibility

Equity

Economy

Evaluation Metrics

Water Quality

Stormwater Capture

Maintenance Cost/Plan

Construction Cost

Equitable Distribution of Costs and Benefits

Impact on Rental Housing Costs

Utilization of Financial Assistance Among Vulnerable Households

Property Values

Environmental Sustainability: Methods

What is the impact of the green alleys project on mitigating flooding and water quality issues?

- No current system for measuring runoff or water quality
- Alternative methods used to estimate impact
 - Literature Review
 - Expert Interviews From 20 different organizations and experts in the field.
 - National Land Cover Database (NLCD) → Green Values Stormwater Management Calculator
- Performance varies based on rainfall events
- Extrapolated to “full implementation” of all 240 green alleys



Environmental Sustainability: Key Findings

Literature Review



Expert Interviews

Green Values Stormwater Management Calculator



Threshold ranges of total imperviousness within a watershed associated with different degrees of stream quality:

- Sensitive (1–10% impervious cover)
- Impacted (11–25% impervious cover)
- Non-supporting (26% and greater impervious cover)

Environmental Sustainability: Key Findings

Literature Review

- Negligible effect on stormwater capture – Iowa Flood Center
- High ability to reduce concentrations of solid sediments, medium ability to reduce total phosphorus and particulates, and a low ability to filter dissolved fractions (phased pollutants) – USGS

Expert Interviews



Green Values Stormwater
Management Calculator



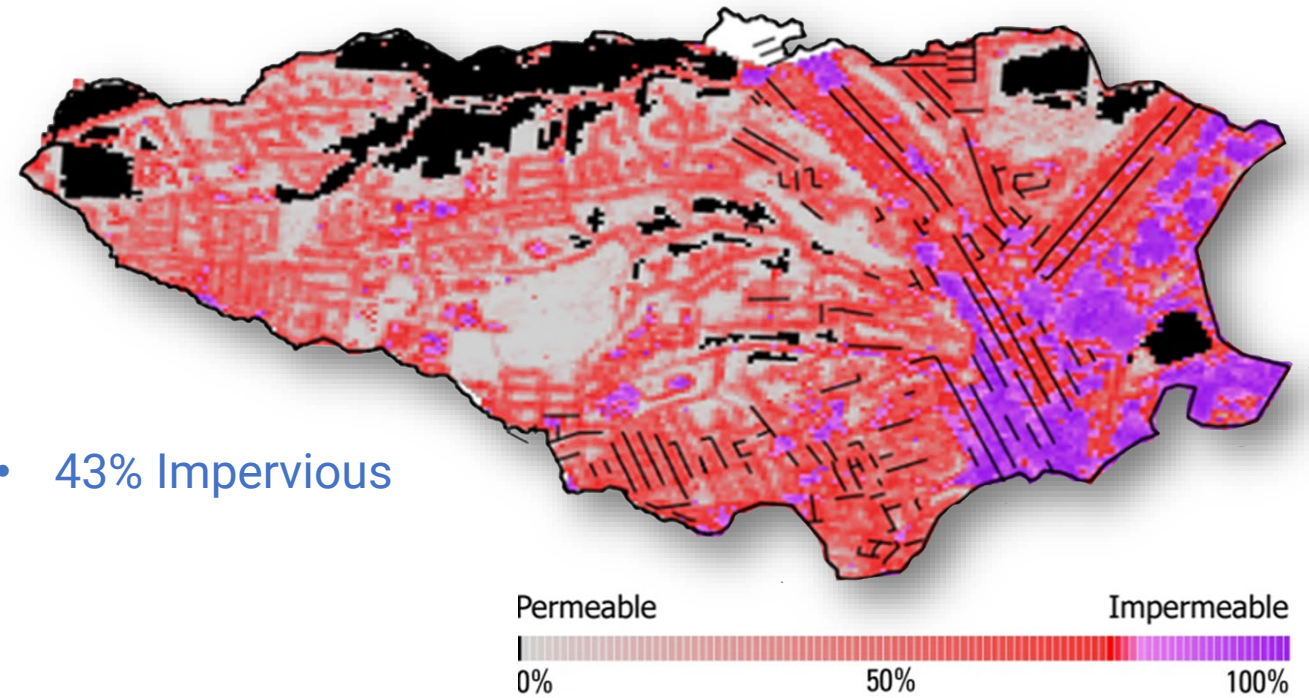
Environmental Sustainability: Key Findings

Permeability in the Bee Branch Watershed (2021)

Literature Review

Expert Interviews

Green Values Stormwater
Management Calculator



- 43% Impervious

- Current Implementation: 580,000 Gallons or 1% of Annual Stormwater Captured
- Full implementation: 2,070,285 Gallons or 3% of Annual Stormwater Captured

Fiscal Responsibilities: Methods

How do streamlined processes, prioritizing the ease of management, contribute to enhancing overall efficiency?

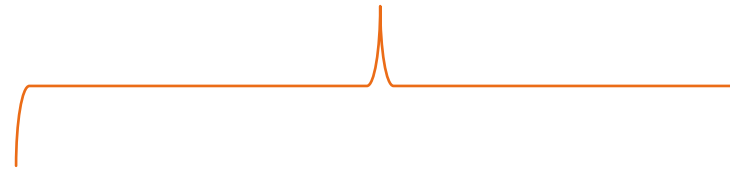
- No current maintenance plan for Green Alleyways
- Alternative methods used to estimate impact
 - Clean Water Iowa and the Department of Agriculture and Land Stewardship
 - Iowa Stormwater Education Partnership and the Iowa Department of Natural Resources
- Performance varies based on the frequency of routine maintenance



Fiscal Responsibilities: Key Findings

Lit Review and Expert Interviews

- Proper Routine Maintenance



Maintenance Cost



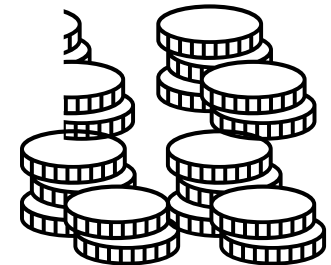
IOWA STORMWATER EDUCATION PARTNERSHIP

Fiscal Responsibilities: Key Findings

Lit Review and Expert Interviews

Maintenance Cost

	Current	Full Implementation (est)
Construction costs	\$10 million	\$57 million
Current Costs of Annual Maintenance	\$21,221.67	\$61,363.86
Cost of Maintenance Following Recommended Best Practices	\$743,844 (recommended)	\$2,656,870 (recommended)



Fiscal Responsibilities: Key Findings – Things to Consider

Lit Review and Expert Interviews

Maintenance Cost

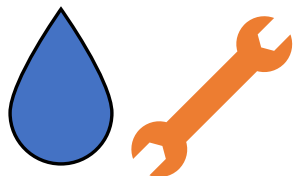
- Recommended maintenance
- Frequency
- Activities

Maintenance Plan



Analysis of Environmental Sustainability and Maintenance/Fiscal Responsibility

Evaluation	Impact
Impact of well-maintained green alleys on reducing runoff for frequent precipitation events (e.g. 2-year)	High
Impact of green alleys on reducing runoff for frequent precipitation events based on current maintenance schedule	High, but potentially diminished
Impact of green alleys on reducing runoff for infrequent precipitation events (e.g. 100-year)	Negligible
Impact of green alleys on meeting Dubuque's stated goals for stormwater retention in the Bee Branch watershed	1-3% (Moderate)



Equity: Methods

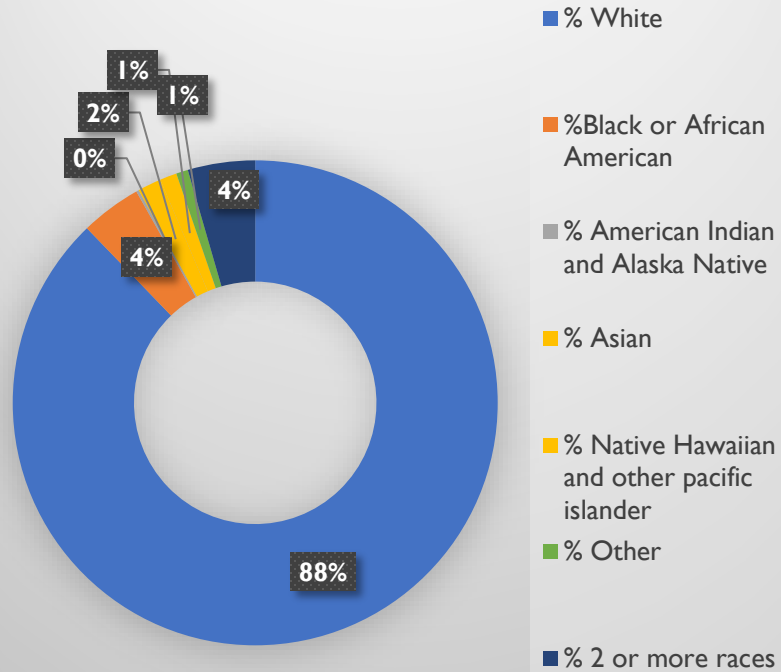
How has the implementation of green alleys contributed to the pursuit of equity in the City of Dubuque and preventing disparities among residents?

- Evaluation of the impact rental housing cost, equitable distribution of costs and benefits, and utilization of financial assistance among vulnerable household
- Conducted through comparing
 - Block groups with completed green alleys
 - Block groups with scheduled green alleys
 - Block groups without completed or scheduled green alleys
 - City of Dubuque

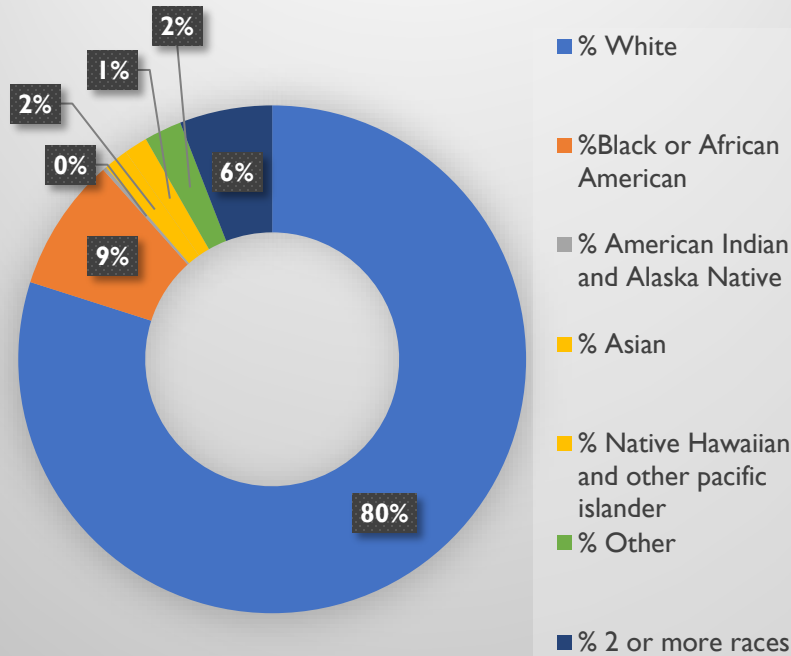


Equity: Key Findings

2018-2022 Racial breakdown for the City of Dubuque

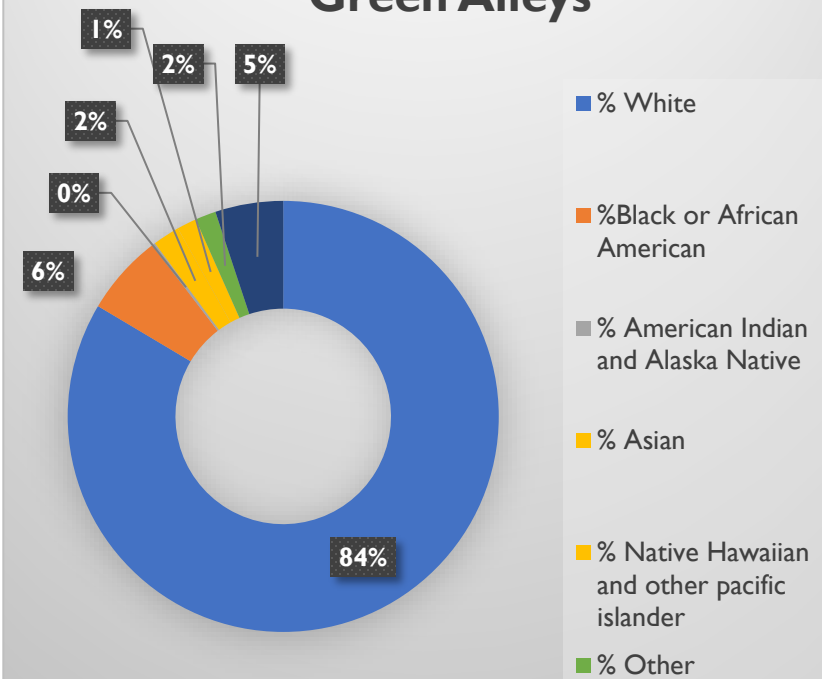


2018-2022 Racial breakdown for block groups with a Completed Green Alley



Current Implementation

2018-2022 Racial breakdown for Block Groups with a Completed & Scheduled Green Alleys



Full Implementation

Equity: Key Findings

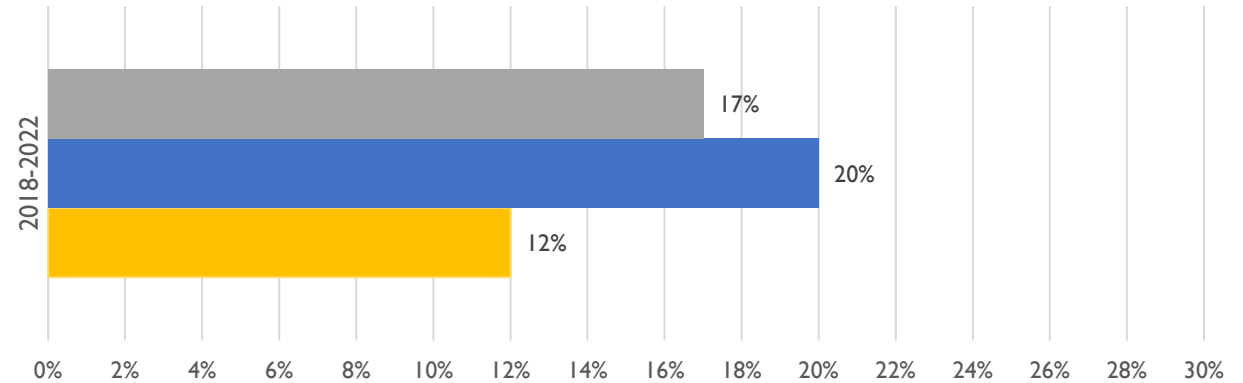
- Moderate impact

Equitable distribution of costs and benefits

Impact on rental housing cost

Utilization of financial assistance among vulnerable households

Percentage of Income in the past 12 months below poverty line



- Block Groups with a Completed and Scheduled Green Alley
- Block Groups with a Completed Green Alley
- City of Dubuque



Equity: Key Findings

- No significant relationship between green alleys and rental costs

Equitable distribution of costs and benefits

Impact on rental housing cost

Utilization of financial assistance among vulnerable households

Median Gross Rent

City of Dubuque			
	2005-2009	2018-2022	Percentage Change
City of Dubuque	565	915	62%
Block Groups with Completed Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 2, CT 4	701	1590	127%
Block Groups with Scheduled Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 1, CT 5	461	972	111%
Block Groups without Scheduled or Completed Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 2, CT 101.03	957	1334	39%

Lower Contract Rent

City of Dubuque			
	2005-2009	2018-2022	Percentage Change
City of Dubuque	428	582	36%
Block Groups with Completed Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 2, CT 7.01	255	771	202%
Block Groups with Scheduled Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 4, CT 7.02	390	648	66%
Block Groups without Scheduled or Completed Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 3, CT 8.01	378	592	57%



Equity: Key Findings

Equitable distribution of costs and benefits

Impact on rental housing cost

Utilization of financial assistance among vulnerable households

- Our findings hypothesize that more households are eligible for assistance than those receiving it

	Total housing units	Total Special Assessments	# of households that received financial assistance	% Assessments w/ assistance	% HH Income < \$50,000	% Renters	% Non-White	Median Household Income
Census Tract 5, Block Group 3	529	80	0	0%	92%	83%	42%	\$34,688
Census Tract 9, Block Group 1	763	113	14	12%	32%	25%	7%	\$58,789

- Complicated by the percentage of renters, since that group cannot apply for financial assistance



Equity: Analysis

Evaluation	Impact
Equitable distribution of cost and benefits	Moderate
Impact on rental cost	Inconclusive
Utilization of financial assistance among vulnerable households	Low



Economy: Methods

How does the implementation of green alley influence the economy, particularly property value?

- Green alleys impact on property value
- Method: Difference in Differences
 - Treatment group (properties adjacent to GA)
 - Comparison group (properties not adjacent to GA within a census track)

Treatment Group
(Properties adjacent to GA)



Comparison Group
(Properties, not adjacent to GA, within a Census Block Group)

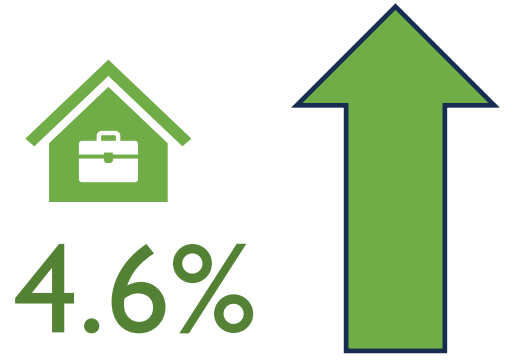
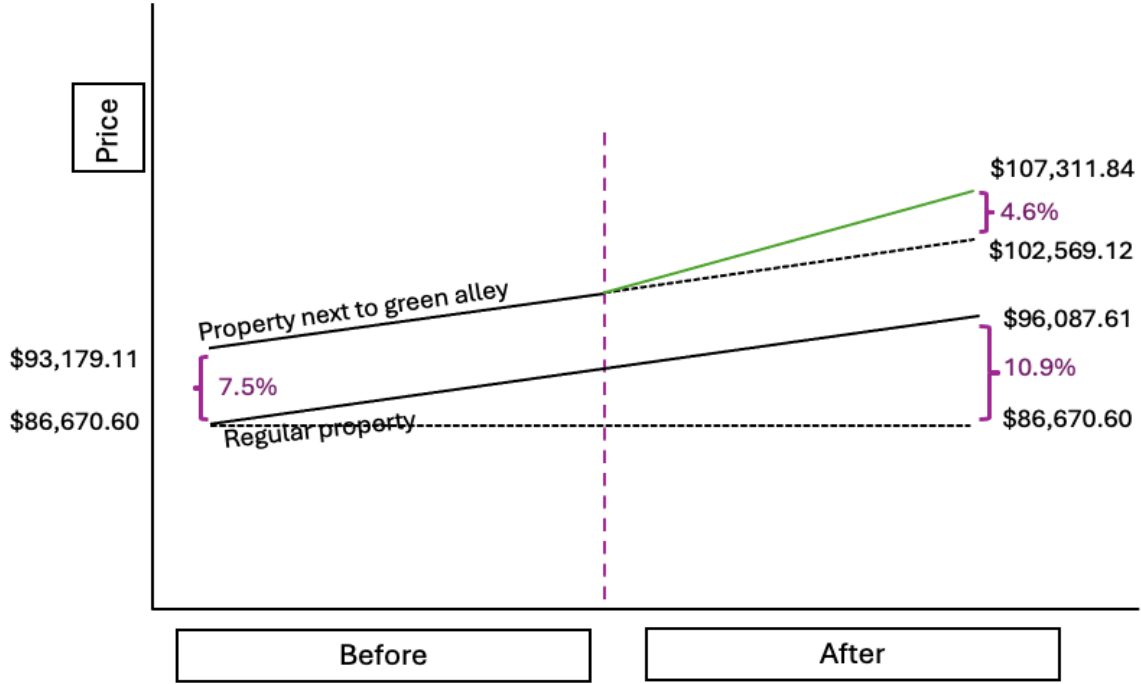


- Data: time series data of 2012 and 2023



Economy: Key Findings

Impact on Property Value



Property adjacent to Green Alley	Property NOT adjacent to Green Alley
15.5% (2012-2023) (X+4.6%)	10.9% (2012-2023) (X)



Economy: Analysis

Evaluation	Current	Full Implementation
Impact on property value	\$3,710,699 (2012 dollar value)	\$11,478,124 (2012 dollar value)



Evaluation Metrics

Goals/Metrics	Impact Categories	Before implementation	Current Implementation	Full implementation
Economy	Property values	X	\$3,710,699	\$11,478,124
Equity	Equitable distribution of costs and benefits	Low	Medium	Low
Fiscal Responsibility	Maintenance plan	\$0, no maintenance needed when there are no green alleys in place.	(Low) \$21,221.67 of maintenance a year. Recommendations suggest \$2/sq ft, totaling \$743,844 annually	(Low) \$61,363.86/year. Recommendations suggest roughly \$2/sq ft, totaling \$2,656,870 annually
	Construction Costs	\$0	\$10 million	\$57 million
Sustainability	Water quality	Before the implementation of the permeable pavers there appears to be some work being done in the Bee Branch Watershed area to improve water quality.	No actual data, lack incentives	Low considering current degree of maintenance management - Will be much higher if following a more rigorous maintenance plan
	stormwater capture (low frequency +5 year storm events)	Low (barring other BMPs)	Low	Low
	stormwater capture (0-5 year event high frequency)	Low (barring other BMPs)	Low	Negligible - Low

Should the Green Alley Reconstruction Project be continued?

- Consider following the Best Maintenance Practice Plan to
 - Explore the possibility of either developing a Watershed Management Authority for the Bee Branch Watershed or including the Bee Branch within the Catfish Creek Watershed Management Plan
 - Increase knowledge of financial assistance offered for special assessments





**Thank you for
your attention!**

Stephanie Gutierrez
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Evaluation Metrics

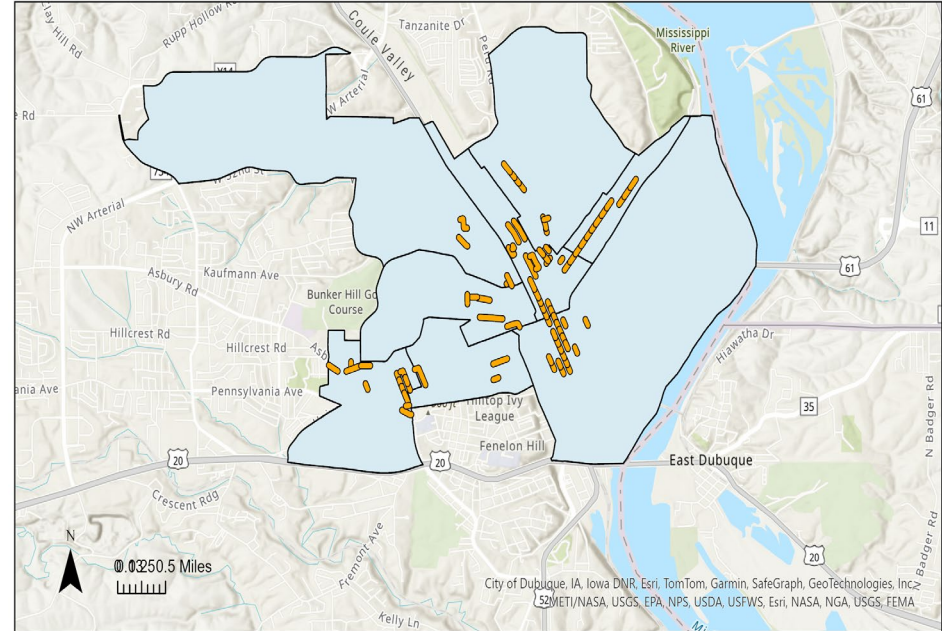
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	stormwater capture (low frequency +5 year storm events)	Low (barring other BMPs)	Low	Low
	stormwater capture (0-5 year event high frequency)	Low (barring other BMPs)	Low	Negligible - Low
	Stormwater capture	0% Capture through BMP such as a permeable paver system.	1% volume capture	3.6% volume capture

Research Limitations: Economy

1) Time Series Data

2009	2010	2011	2012	2013	2020	2021	2022	2023

2) Control Group

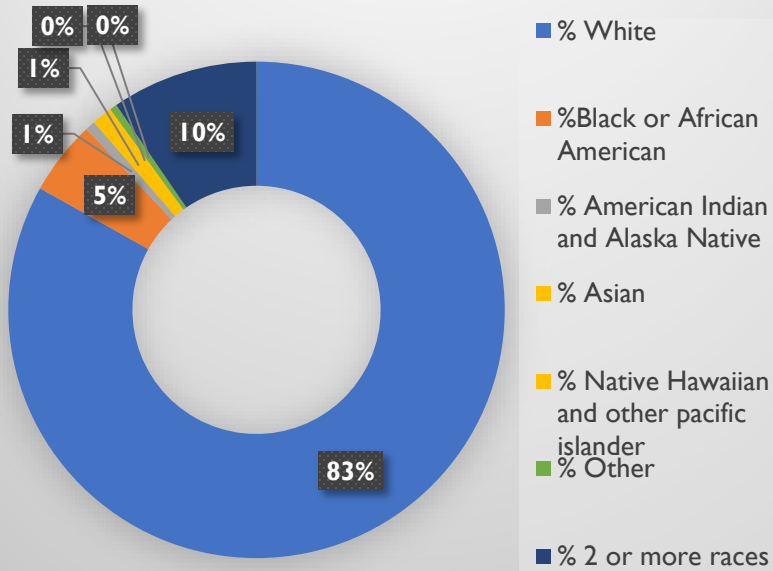


- Green Alley Complete
- Census Tracts

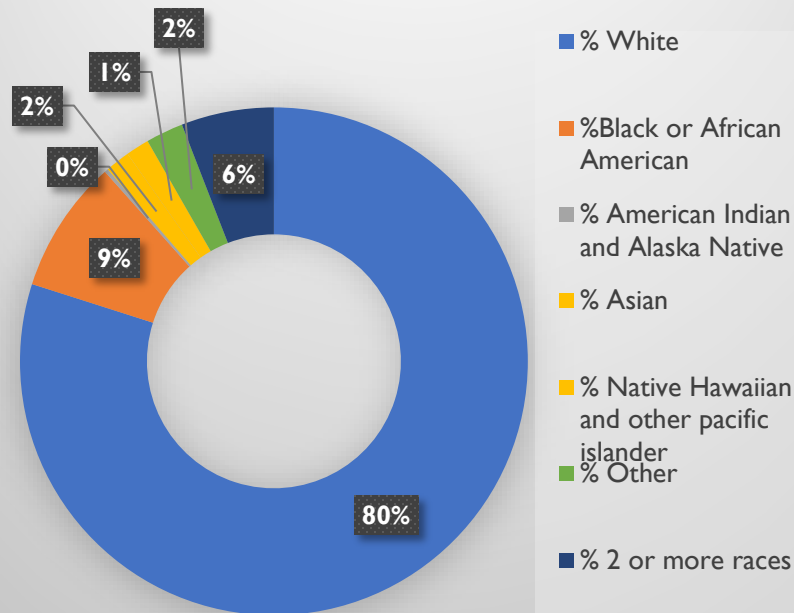


EQUITY – EQUITABLE DISTRIBUTIONS OF COST & BENEFITS

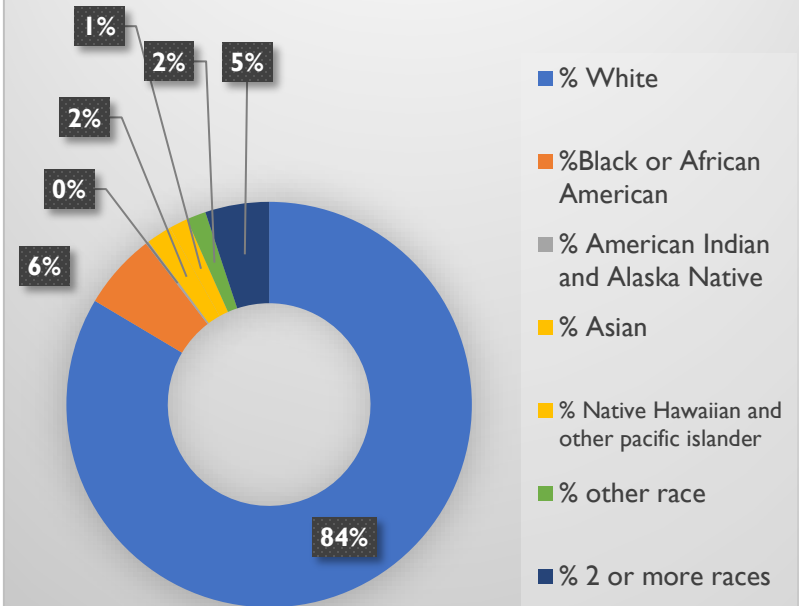
2009-2013 Racial breakdown for block groups with a Completed Green Alley



2018-2022 ACS Racial breakdown for block groups with a Completed Green Alley



2018-2022 ACS Racial breakdown for block groups with a Completed & Scheduled Green Alley



Evaluation Metrics

Goals/Metrics	Impact Categories	Before implementation	Current Implementation	Full implementation
Economy	Property values	X (2012)	X+4.6% (2023) P value = 0.002	Total number of parcels: 3,070 1,150 parcels for 80 green alleys 1,920 parcels (additional) for full implementation of alleys
Equity	Utilization of financial assistance among vulnerable households	Program did not exist	Low	Low
Fiscal Responsibility	Maintenance plan	\$0, no maintenance needed when there are no green alleys in place.	Dubuque has 371,922 sq ft of permeable pavers with a maintenance budget of \$21,221.67/year. Recommendations suggest \$2/sq ft, totaling \$743,844 annually	With current maintenance levels, they'll spend approximately \$61,363.86/year. Following the recommended \$2/sq ft, the annual cost for proper maintenance will be \$1,913,026.
	Construction Costs	\$0	\$10 million	\$57 million
Sustainability	Water quality	Before the implementation of the permeable pavers there appears to be some work being done in the Bee Branch Watershed area to improve water quality.	No actual data, lack incentives	Low considering current degree of maintenance management - Will be much higher if following a more rigorous maintenance plan
	stormwater capture (low frequency)	Low (barring other BMPs)	Low	Low
	stormwater capture in a 2-5 year event (high frequency)	Low (barring other BMPs)	Low	Negligible
	Stormwater capture	0% Capture through BMP such as a permeable paver system.	1% capture of the average annual rainfall based on the City's Volume Capacity Capture Goal of 1.2".	The Green Infrastructure applied in this scenario increases the area's potential volume capture capacity by 276,757 cubic ft, 207,0288.5 gallons, or 3.6% of the desired goal.

Site Information

Green Improvements



Rainfall data for: Dubuque, IA

edit

Avg. Annual Rainfall: 36.00 inches [?]

Volume Capacity Capture Goal

close

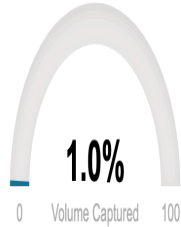
Increase the capacity of the landscape to capture at least 1.2 inches of water over the impervious areas. For this scenario that is equal to 7,791,600 ft³ or a volume of 58,285,220 gallon.

Define how much water you want to capture. A common goal municipalities often suggest is to capture a volume equal to 1/2 inch of rain falling on the impervious elements of the site. Note that this goal is simply the increase in the potential volume of rainfall that the area can absorb.

Precipitation Depth Capture (in):

Volume Captured Over:

Impervious Surface Whole Site



Total Cost: \$4,661,085

Results: The green infrastructure applied in this scenario increases the area's potential volume capture capacity by 77,483.8 ft³ or 1% of the desired goal.

Site Overview	Volume	Runoff	Costs	Benefits
Total Land Use				
Land Use	Original Area	Area including BMP(s)		
Total Impervious Area	77,916,000 ft ²	77,544,078 ft ²		
Street	77,916,000 ft ²	77,544,078 ft ²		
Permeable Streets		371922 ft ²		
Total Landscape Area	103,284,000 ft ²	103,284,000 ft ²		
Lawn/Turf	19,932,000 ft ²	19,932,000 ft ²		
Flower Bed/Garden	10,872,000 ft ²	10,872,000 ft ²		
Shrub and Bushes	18,120,000 ft ²	18,120,000 ft ²		
Natural Open Area	54,360,000 ft ²	54,360,000 ft ²		
Total BMP Area		371,922 ft ²		
Total Lot Area	181,200,000 ft ²	181,200,000 ft ²		
Other Volume Control		0 gallons		

Site Information

Green Improvements



Rainfall data for: Dubuque, IA

edit

Avg. Annual Rainfall: 36.00 inches [?]

Volume Capacity Capture Goal

close

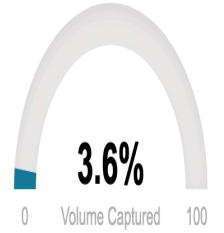
Increase the capacity of the landscape to capture at least 1.2 inches of water over the impervious areas. For this scenario that is equal to 7,791,600 ft³ or a volume of 58,285,220 gallon.

Define how much water you want to capture. A common goal municipalities often suggest is to capture a volume equal to 1/2 inch of rain falling on the impervious elements of the site. Note that this goal is simply the increase in the potential volume of rainfall that the area can absorb.

Precipitation Depth Capture (in):

Volume Captured Over:

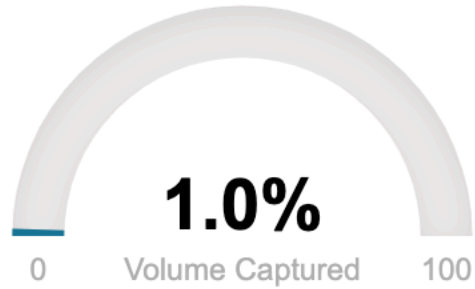
Impervious Surface Whole Site



Total Cost: \$16,648,514

Results: The green infrastructure applied in this scenario increases the area's potential volume capture capacity by 276,757.3 ft³ or 3.6% of the desired goal.

Site Overview	Volume	Runoff	Costs	Benefits
Total Land Use				
Land Use	Original Area	Area including BMP(s)		
Total Impervious Area	77,916,000 ft ²	76,587,565 ft ²		
Street	77,916,000 ft ²	76,587,565 ft ²		
Permeable Streets		1328435 ft ²		
Total Landscape Area	103,284,000 ft ²	103,284,000 ft ²		
Lawn/Turf	19,932,000 ft ²	19,932,000 ft ²		
Flower Bed/Garden	10,872,000 ft ²	10,872,000 ft ²		
Shrub and Bushes	18,120,000 ft ²	18,120,000 ft ²		
Natural Open Area	54,360,000 ft ²	54,360,000 ft ²		
Total BMP Area		1,328,435 ft ²		
Total Lot Area	181,200,000 ft ²	181,200,000 ft ²		
Other Volume Control		0 gallons		



Total Cost: **\$4,661,085**

Results: The green infrastructure applied in this scenario increases the area's potential volume capture capacity by **77,483.8 ft³** or **1%** of the desired goal.

Site Overview

Volume

Runoff

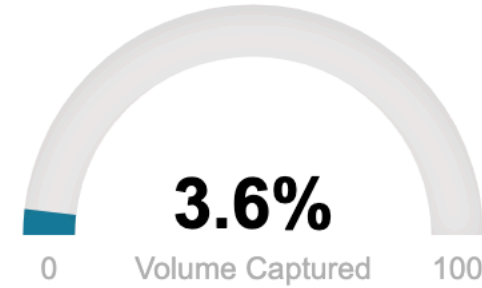
Costs

Benefits

Volume Control

Required Volume Capture Potential from 1.2" over 77916000 ft² of impervious area is: 7,791,600 ft³ or 58,285,220 Gallons.

BMP	ft ³	Gallons
Permeable Streets	77483.8	579618.7
Total of all BMPs	77,483.8	579,618.7
Percentage of Volume Capacity Capture Goal	1	%



Total Cost: **\$16,648,514**

Results: The green infrastructure applied in this scenario increases the area's potential volume capture capacity by **276,757.3 ft³** or **3.6%** of the desired goal.

Site Overview

Volume

Runoff

Costs

Benefits

Volume Control

Required Volume Capture Potential from 1.2" over 77916000 ft² of impervious area is: 7,791,600 ft³ or 58,285,220 Gallons.

BMP	ft ³	Gallons
Permeable Streets	276757.3	2070288.5
Total of all BMPs	276,757.3	2,070,288.5
Percentage of Volume Capacity Capture Goal	3.6	%

Results: The green infrastructure applied in this scenario increases the area's potential volume capture capacity by **77,483.8 ft³** or **1%** of the desired goal.

Site Overview Volume **Runoff** Costs Benefits

Runoff and Hydrology

Runoff	Without BMPs	With BMPs	Difference
Average Annual Rainfall: 36" Rain			
Runoff	3.651"	3.626"	1%
Runoff Volume	55124127.7 ft ³ 412357139.4 gal.	54746736.7 ft ³ 409534058.6 gal.	377391 ft ³ 2823080.8 gal.
Average Storm Rainfall: 2.30" Rain			
Runoff	0.958"	0.954"	0%
Runoff Volume	14465615.7 ft ³ 108210327.6 gal.	14409897 ft ³ 107793522.5 gal.	55718.7 ft ³ 416805.1 gal.
Hydrology	Without BMPs	With BMPs	Difference
Average Initial Abstractions Rainfall: " Rain			
Initial Abstractions	0.38"	0.39"	0%
Initial Abstractions Volume	5790942.68 ft ³ 43319262.51 gal.	5818873.87 ft ³ 43528202.4 gal.	27931.2 ft ³ 208939.89 gal.
Average Cumulative Abstractions			
Cumulative Abstractions	1.92"	1.93"	0.01%
Cumulative Abstractions Volume	28954713.38 ft ³ 216596312.56 gal.	29094369.37 ft ³ 217641011.99 gal.	139655.99 ft ³ 1044699.43 gal.
Curve Number	83.9	83.8	

Results: The green infrastructure applied in this scenario increases the area's potential volume capture capacity by **276,757.3 ft³** or **3.6%** of the desired goal.

Site Overview Volume **Runoff** Costs Benefits

Runoff and Hydrology

Runoff	Without BMPs	With BMPs	Difference
Average Annual Rainfall: 36" Rain			
Runoff	3.651"	3.562"	2%
Runoff Volume	55124127.7 ft ³ 412357139.4 gal.	53787996.3 ft ³ 402362182.2 gal.	1336131.3 ft ³ 9994957.2 gal.
Average Storm Rainfall: 2.30" Rain			
Runoff	0.958"	0.945"	1%
Runoff Volume	14465615.7 ft ³ 108210327.6 gal.	14267159.2 ft ³ 106725769.8 gal.	198456.5 ft ³ 1484557.8 gal.
Hydrology	Without BMPs	With BMPs	Difference
Average Initial Abstractions Rainfall: " Rain			
Initial Abstractions	0.38"	0.39"	0.01%
Initial Abstractions Volume	5790942.68 ft ³ 43319262.51 gal.	5890983.81 ft ³ 44067622.23 gal.	100041.14 ft ³ 748359.71 gal.
Average Cumulative Abstractions			
Cumulative Abstractions	1.92"	1.95"	0.03%
Cumulative Abstractions Volume	28954713.38 ft ³ 216596312.56 gal.	29454919.06 ft ³ 220338111.13 gal.	500205.68 ft ³ 3741798.57 gal.
Curve Number	83.9	83.7	

EASE OF MANAGEMENT



**IOWA STORMWATER
EDUCATION PARTNERSHIP**

SORT



EASE OF MANAGEMENT

METHODOLOGY



IOWA DEPARTMENT OF
**AGRICULTURE &
LAND STEWARDSHIP**



IOWA STORMWATER
EDUCATION PARTNERSHIP



SORT

FINDINGS



Best Maintenance Practices
for Permeable Pavers

Maintenance Plans and Recommendations



EASE OF MANAGEMENT

Goals/Metrics	Impact Categories	Before implementation	After implementation	Full implementation
Ease of Management	Maintenance plan	Non-existent, would send staff to provide maintenance when time and staff availability allowed.		When following a routine maintenance plan as suggested from the IDNR and Clean Water Iowa/ The Iowa Department of Agriculture and Land Stewardship the permeable paver system will work more effectively in terms of flood mitigation and improving water quality when compared to not adhering to the suggested routine maintenance plan.
	Funding mechanism	City of Dubuque's Public Works budget	After creating a Watershed Management Authority to oversee the Bee Branch Watershed the City of Dubuque will be eligible to receive funding from the IDNR and the USDA-NRCS so that they can carry out necessary maintenance and planning for the watershed.	not applicable



IOWA STORMWATER EDUCATION PARTNERSHIP

SORT

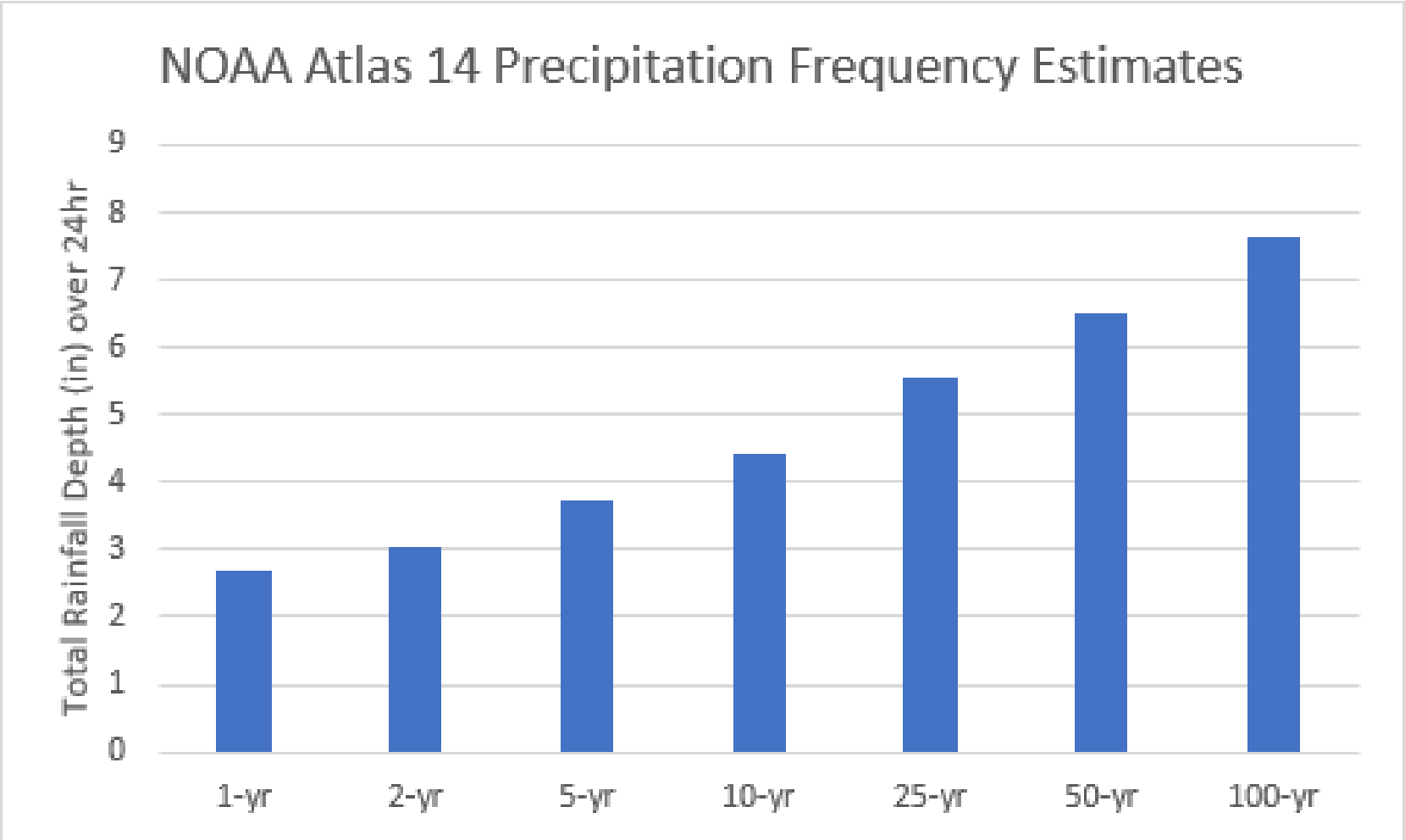
Key Findings

Literature Review

Green Values Stormwater Management Calculator

Expert Interviews

- **Daniel Gilles, PE**
Water Resources Engineer, IIHR-Hydroscience & Engineering
Do I discuss water quality here or on a duplicate slide?



EQUITY – IMPACT ON RENTAL HOUSING COST

Median Gross Rent

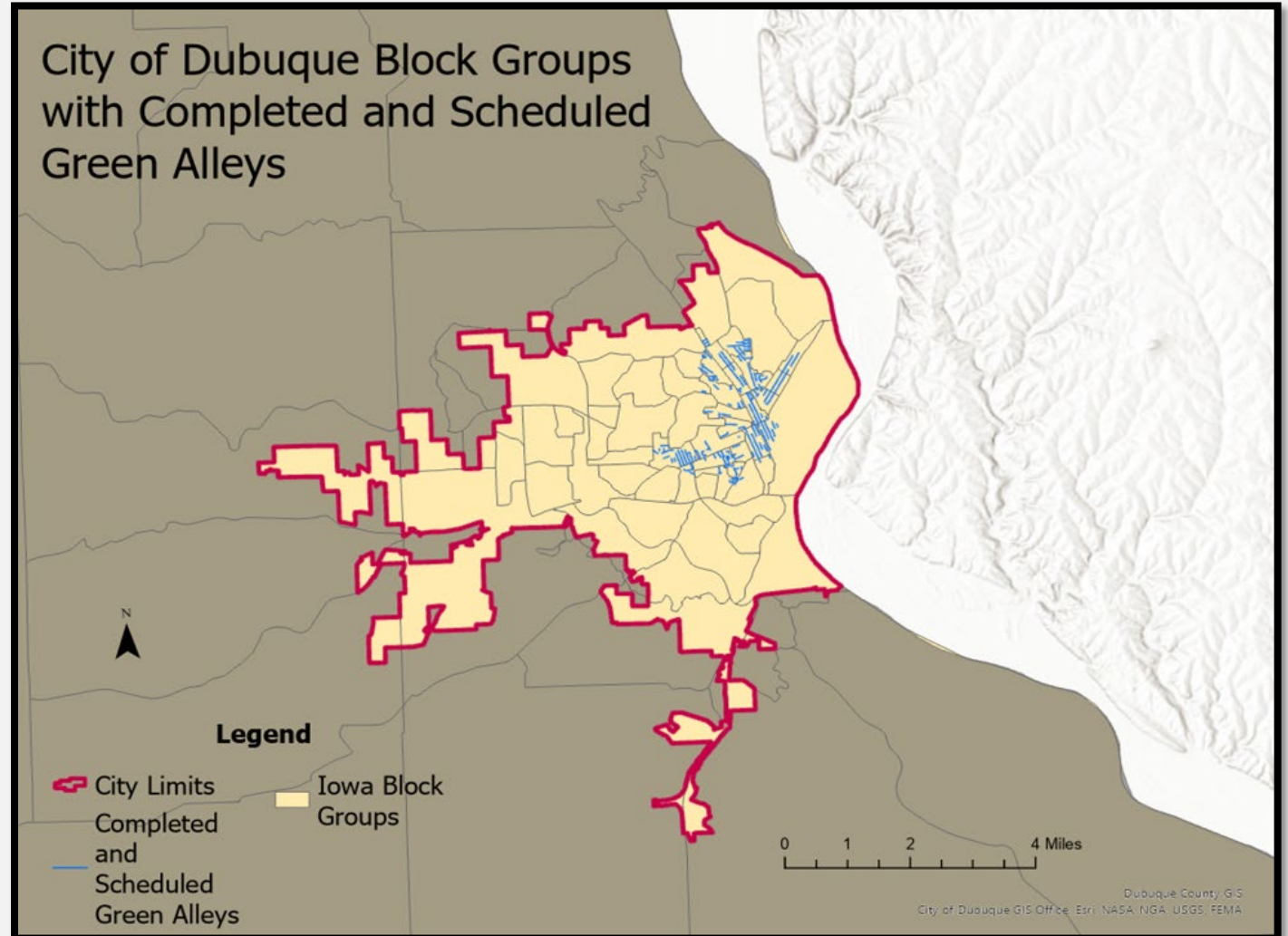
	2005-2009	2018-2022	Percentage Change
City of Dubuque	565	915	62%
Block Groups with Completed Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 1, CT 1	515	902	75%
Block Group 1, CT 3	697	684	-2%
Block Group 2, CT 4	701	1590	127%
Block Group 2, CT 5	520	738	42%
Block Group 1, CT 6,	519	1000	93%
Block Group 2, CT 6	494	724	47%
Block Group 1, CT 7.01	674	1244	85%
Block Group 2, CT 7.01	378	995	163%
Block Groups with Scheduled Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 2, CT 1	N/A	811	#VALUE!
Block Group 1, CT 5	461	972	111%
Block Group 3, CT 7.01	766	N/A	#VALUE!
Block Group 1, CT 7.02	588	745	27%
Block Group 2, CT 7.02	642	966	50%
Block Group 4, CT 7.02	543	967	78%
Block Group 3, CT 11.04	N/A	856	#VALUE!
Block Group 4, CT 11.04	N/A	N/A	#VALUE!
Block Groups without Scheduled or Completed Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 3, CT 6	573	1651	188%
Block Group 2, CT 8.01	625	817	31%
Block Group 3, CT 8.01	663	855	29%
Block Group 3, CT 9	1031	895	-13%
Block Group 2, CT 11.01	532	721	36%
Block Group 1, CT 12.01	508	728	43%
Block Group 2, CT 12.01	710	961	35%
Block Group 2, CT 101.03	957	1334	39%

Lower Contract Rent

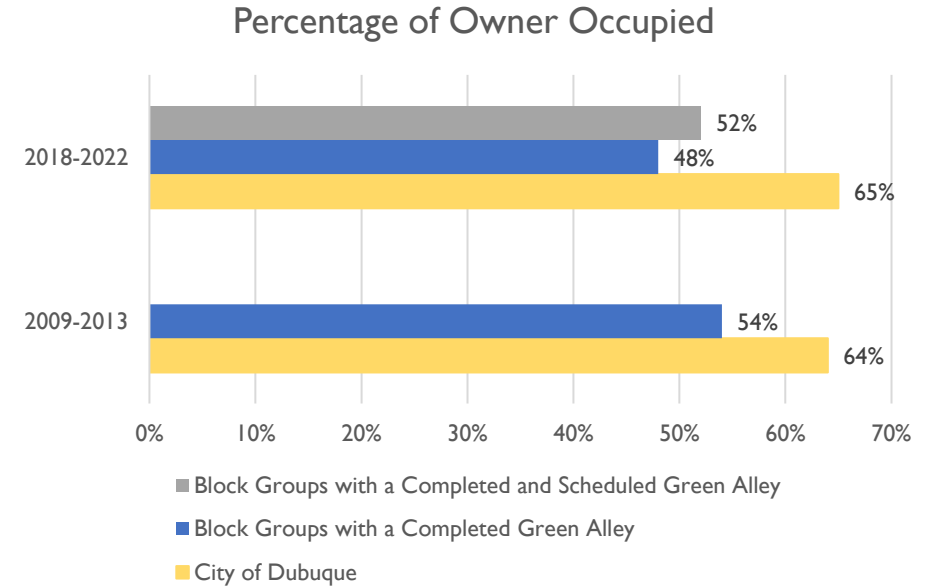
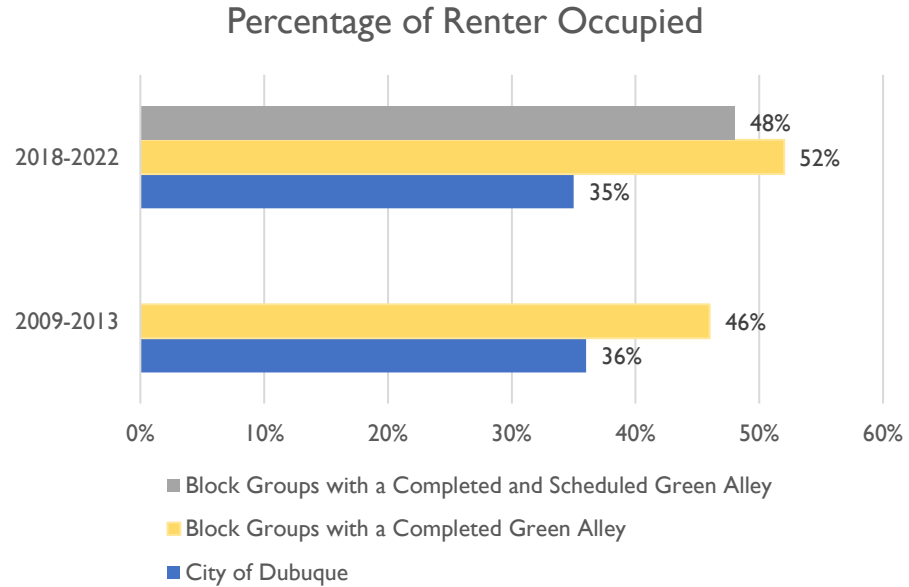
	2005-2009	2018-2022	Percentage Change
City of Dubuque	428	582	36%
Block groups with Completed Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 1, CT 1	244	567	132%
Block Group 1, CT 3	389	413	6%
Block Group 2, CT 4	376	906	141%
Block Group 1, CT 6,	382	413	8%
Block Group 2, CT 6	318	498	57%
Block Group 1, CT 7.01	373	891	139%
Block Group 2, CT 7.01	255	771	202%
Block Groups with Scheduled Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 2, CT 1	N/A	556	#VALUE!
Block Group 1, CT 5	249	544	118%
Block Group 3, CT 7.01	390	487	25%
Block Group 1, CT 7.02	464	660	42%
Block Group 2, CT 7.02	419	629	50%
Block Group 4, CT 7.02	390	648	66%
Block Group 3, CT 11.04	N/A	680	#VALUE!
Block Groups without completed or scheduled Green Alleys			
	2005-2009	2018-2022	Percentage Change
Block Group 2, CT 8.01	308	656	113%
Block Group 3, CT 8.01	378	592	57%
Block Group 3, CT 9	561	608	8%
Block Group 1, CT 11.01	575	618	7%
Block Group 1, CT 12.01	347	461	33%
Block Group 2, CT 12.01	604	817	35%
Block Group 1, CT 12.02	411	640	56%

EQUITY

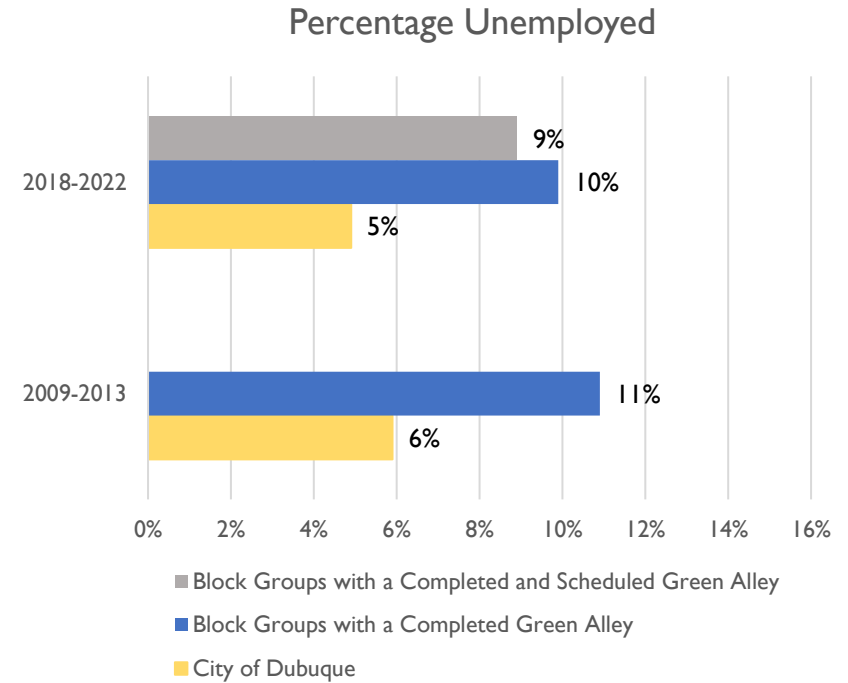
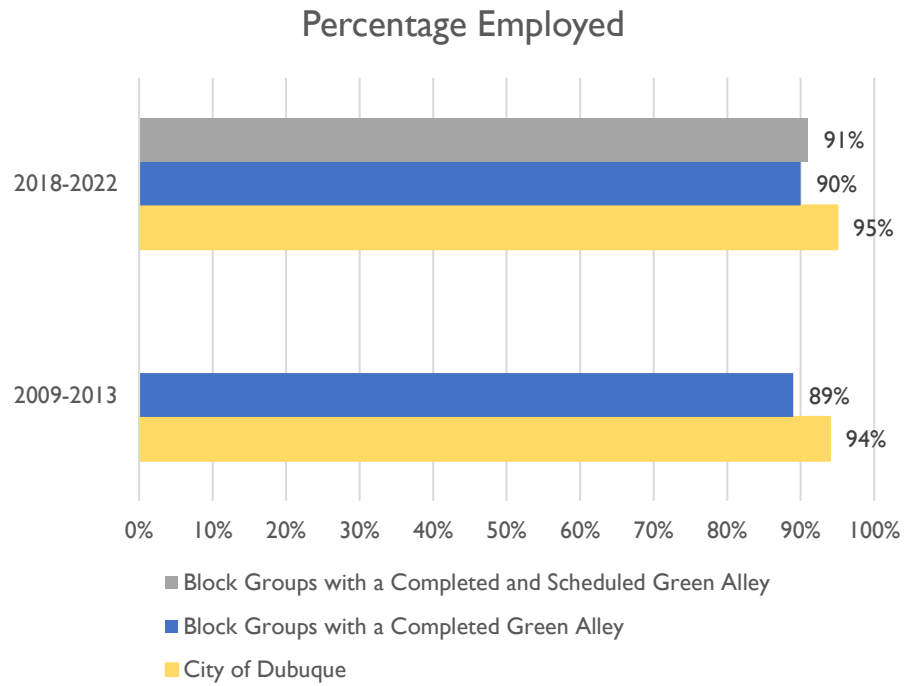
How has the implementation of green alleys contributed to the pursuit of equity in the City of Dubuque and preventing disparities among residents?



EQUITY – EQUITABLE DISTRIBUTIONS OF COST & BENEFITS

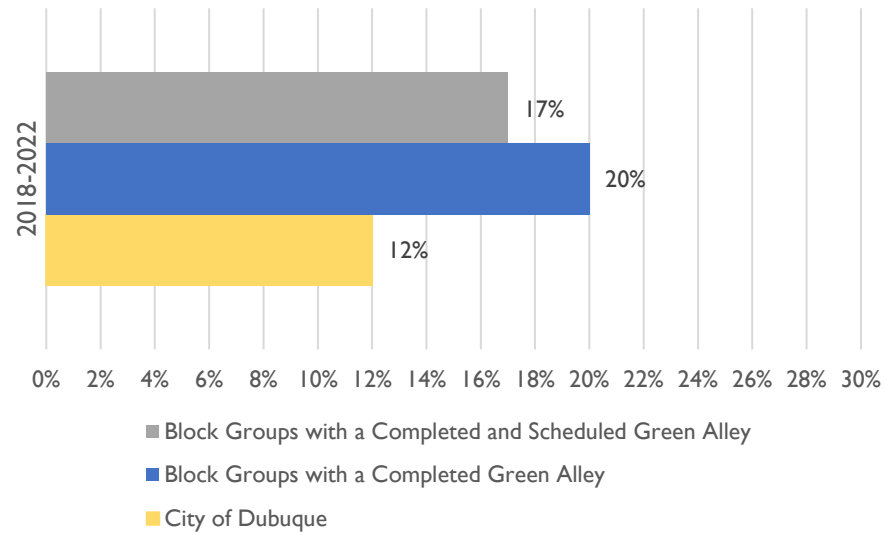


EQUITY – EQUITABLE DISTRIBUTIONS OF COST & BENEFITS

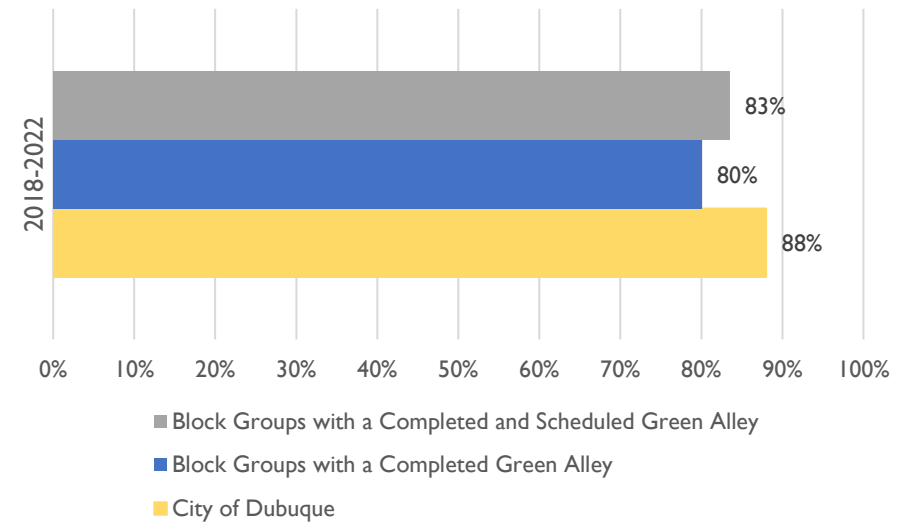


EQUITY – EQUITABLE DISTRIBUTIONS OF COST & BENEFITS

Percentage of Income in the past 12 months below poverty Line

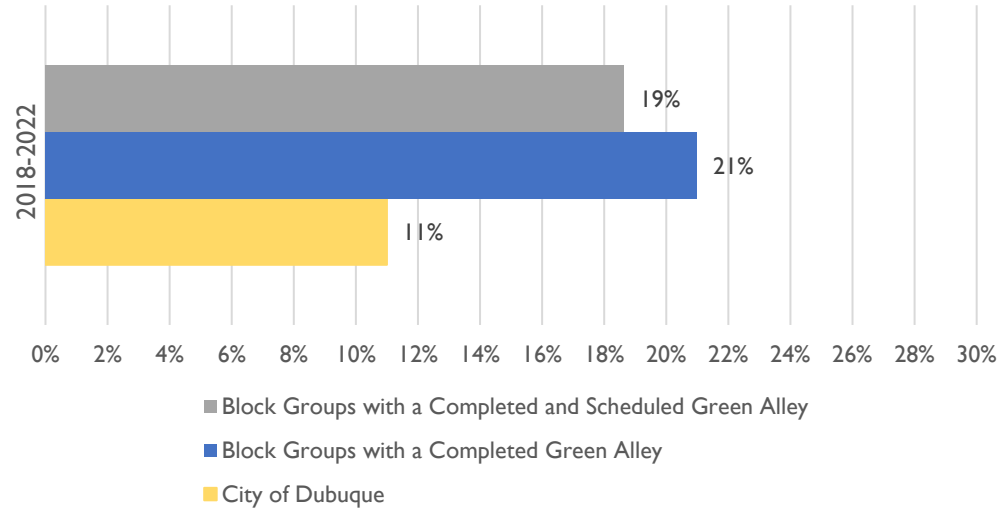


Percentage of income in the past 12 months at or above poverty line

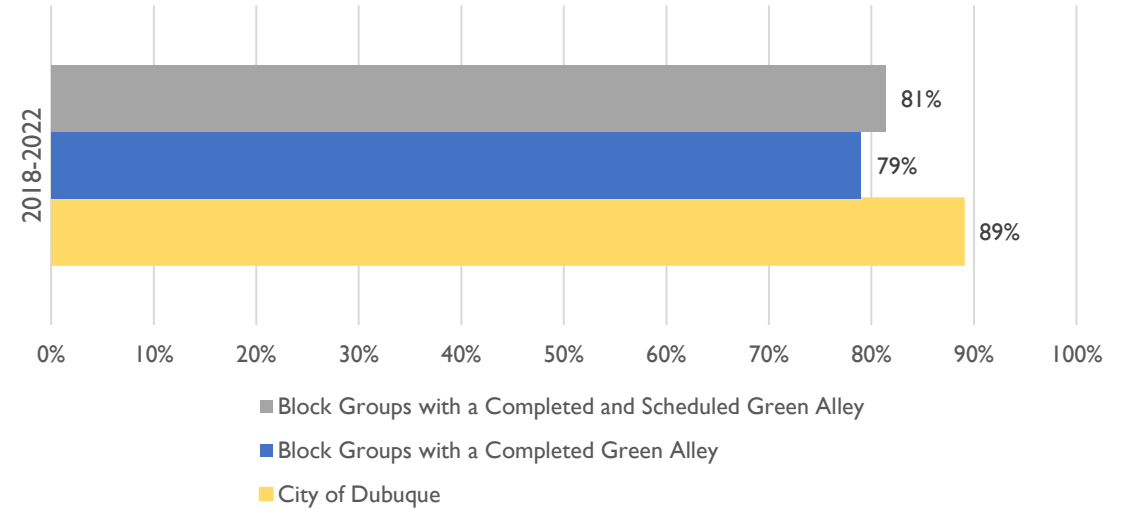


EQUITY – EQUITABLE DISTRIBUTIONS OF COST & BENEFITS

ACS 5-year estimate data of percentage with cash public assistance or food Stamps/SNAP

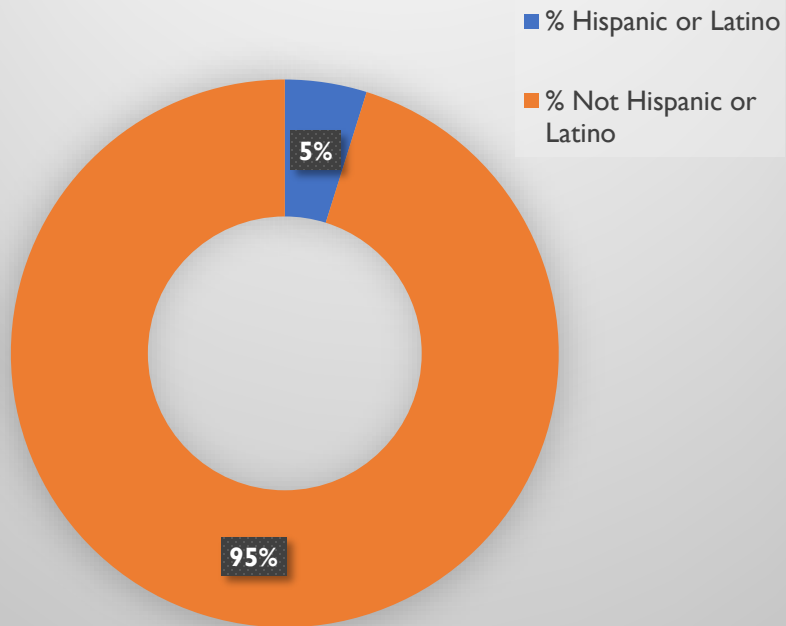


ACS 5-year estimate date of percentage without cash public assistance or food stamps/SNAP

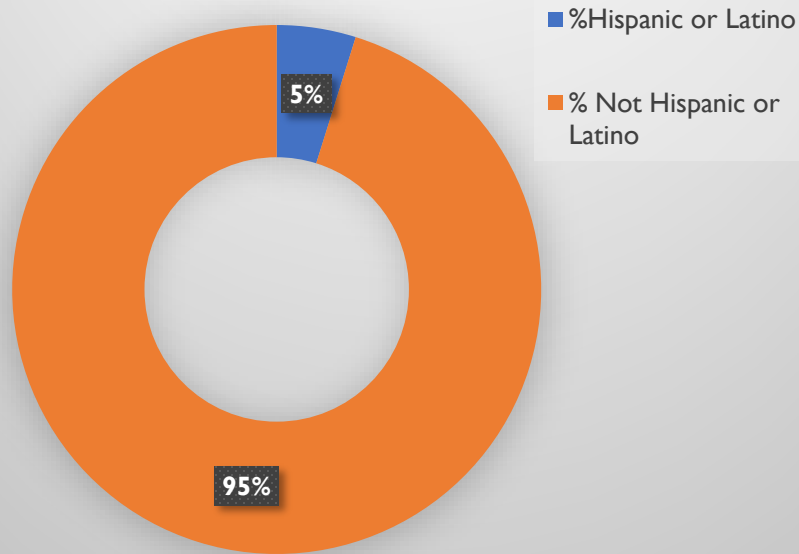


EQUITY – EQUITABLE DISTRIBUTIONS OF COST & BENEFITS

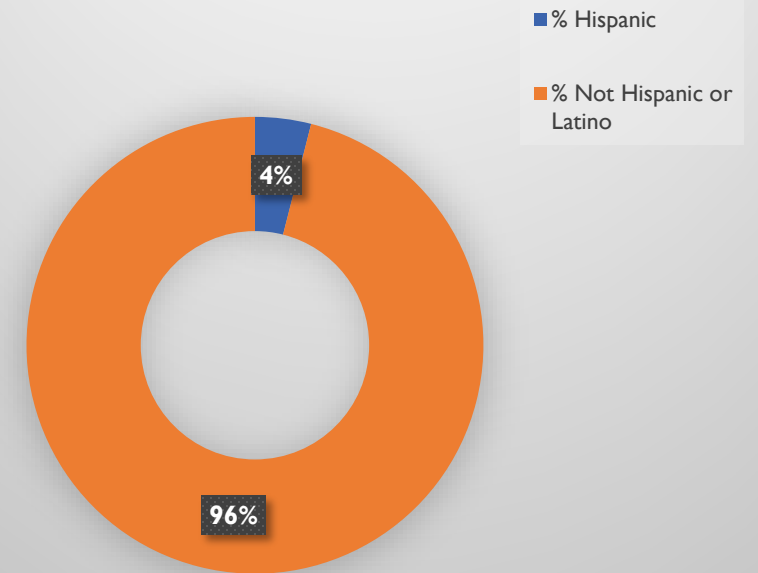
2009-2013 Hispanic or Latino Origin for block groups with a Completed Green Alley



2018-2022 Hispanic or Latino Origin for block groups with a completed green alley

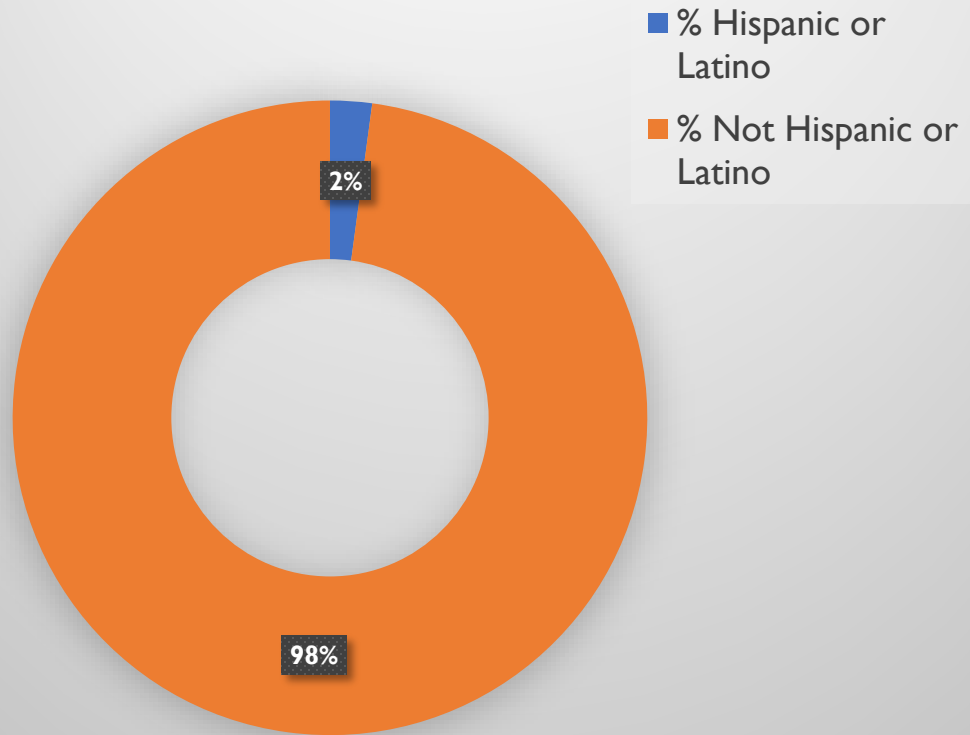


Hispanic or Latino Origin for block groups with a Completed & Scheduled Green Alley

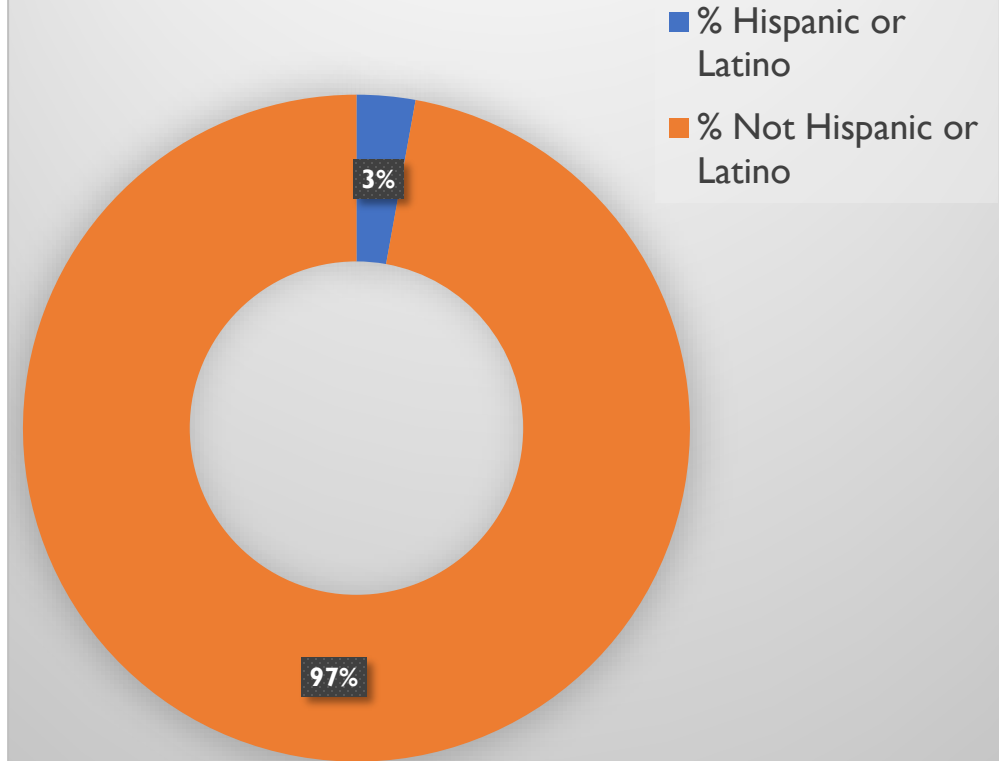


EQUITY – EQUITABLE DISTRIBUTIONS OF COST & BENEFITS

2009-2013 Hispanic or Latino Origin for the City of Dubuque



2018-2022 Hispanic or Latino Origin for the City of Dubuque



	Total housing units	Total Special Assessments	# of households that received financial assistance	% Assessments w/ assistance	% HH Income < \$50,000	% Renters	% Non-White	Median Household Income
Census Tract 1, Block Group 1	826	126	7	6%	55%	86%	18%	\$46,050
Census Tract 1, Block Group 3	521	40	0	0%	35%	79%	50%	\$60,938
Census Tract 3, Block Group 1	826	71	0	0%	54%	22%	8%	\$47,386
Census Tract 3, Block Group 2	411	81	0	0%	47%	42%	28%	\$52,431
Census Tract 4, Block Group 1	474	30	5	17%	28%	15%	7%	\$71,250
Census Tract 4, Block Group 2	558	55	11	20%	50%	38%	25%	\$50,865
Census Tract 5, Block Group 2	345	107	12	11%	81%	41%	9%	\$30,104
Census Tract 5, Block Group 3	529	80	0	0%	92%	83%	42%	\$34,688
Census Tract 5, Block Group 4	615	140	7	5%	61%	66%	16%	\$36,250
Census Tract 6, Block Group 1	341	39	0	0%	27%	23%	28%	\$63,750
Census Tract 6, Block Group 2	554	64	1	2%	72%	85%	22%	N/A
Census Tract 7.01, Block group 1	545	29	0	0%	55%	75%	23%	\$44,342
Census Tract 7.01, Block Group 2	391	5	0	0%	48%	72%	18%	N/A
Census Tract 9, Block Group 1	763	113	14	12%	32%	25%	7%	\$58,789
Census Tract 9, Block Group 2	272	23	1	4%	39%	17%	16%	\$68,209
Census Tract 11.04, Block Group 1	322	12	2	17%	51%	43%	0%	N/A
Census Tract 11.04, Block Group 2	443	40	8	20%	36%	32%	9%	\$73,365