



engineering | environmental | capital planning | project management

Presentation of Findings

Town of Hull, Massachusetts

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Introduction

Who is EMG



Nationwide



Track Record



Offices

Scope of Services for Town of Hull



Facility Condition Assessment (FCA)
with MEP Inventory

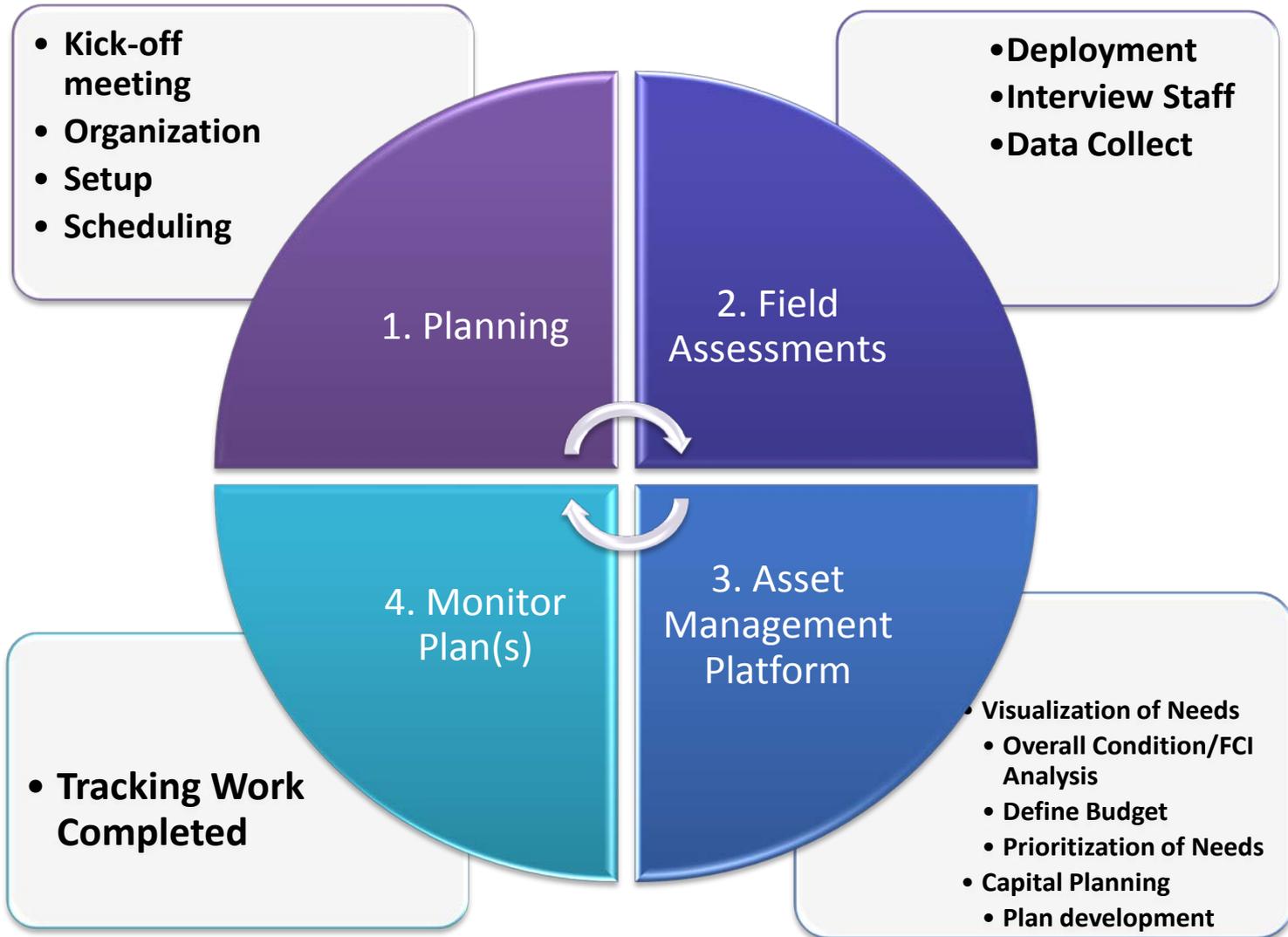


Asset Management Platform with Data
Export to "SchoolDude"



Preventative Maintenance Plan

The FCA Process



Terms to Know

Expected Useful Life (EUL) Industry standard life expectancies.

Effective Age Assessors' professional opinion of an assets condition in terms of years as it relates to an asset's EUL.

Remaining Useful Life (RUL) Difference between the EUL of an asset and its assigned effective age.

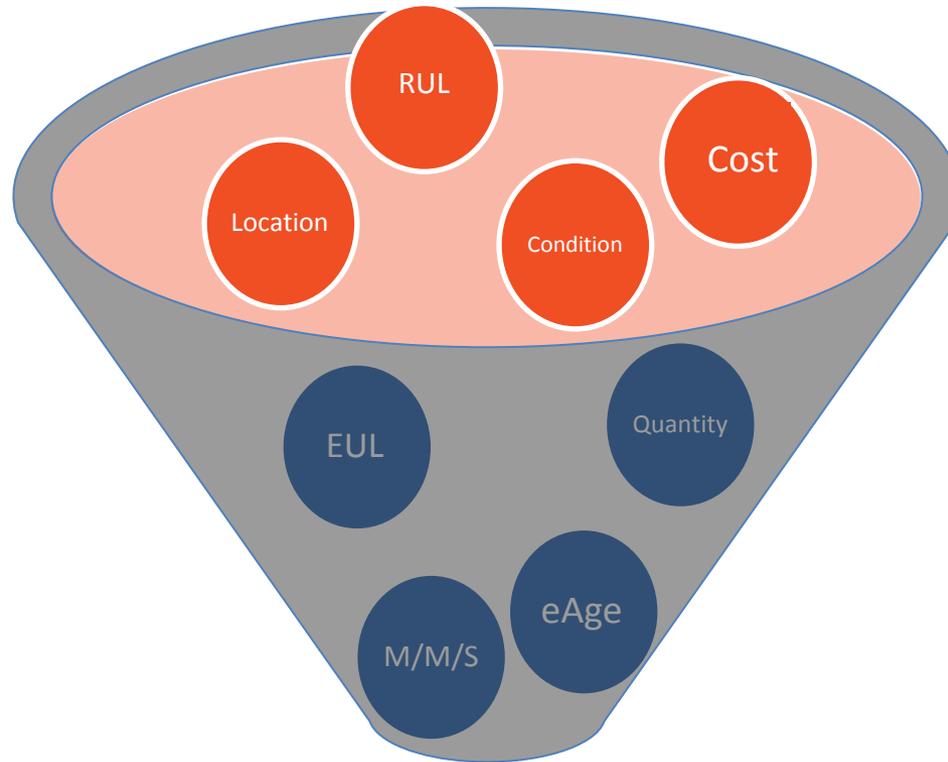
Short term considerations Assets whose effective age has either reached or exceeded their industry accepted EULs.

Reserve Items A list of assets whose effective age has not yet attained their industry accepted EULs

Current Replacement Value (CRV) Researched value to rebuild a facility.



FCA - Critical Data Points



**Replacement Reserve
Prioritization
Capital Plan**



FCA – Typical Outputs

- **Replacement Reserves**
- **Prioritization**
- **Systems and Conditions Table**
- **Facility Condition Index**
- **Capital Planning**
- **Work Completed**

Sample Output - Replacement Reserves



Replacement Reserves Report
Plumbing Room

0/28/2015

Report Section	ID	Cost Description	Lifespan (EUL)	EAGE	RUL	Quantity	Life	Safety	Unit	Unit Cost	Subtotal	Critical	Need	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Deficiency Repair Estimate													
1.2	356068	B1021 Termit Impact Placeholder (Capture Estimated Costs to Correct)	0	0	0	1	True	EA	\$1,764,935.00	\$1,764,935	\$1,764,935																						\$1,764,935													
5.6	356205	E1093 Food Service Equipment, Commercial Kitchen (Allowance), Replace	5	5	0	1	False	EA	\$152,500.00	\$152,500	\$152,500						\$152,500					\$152,500											\$610,000													
6.3	356187	B3011 Modified Bituminous Membrane Roof, Replace	20	20	0	15000	False	SF	\$9.01	\$135,150	\$135,150																						\$135,150													
6.3	356199	B3011 Clay/Concrete Tile Roof, Replace	40	40	0	4250	False	SF	\$28.50	\$121,125	\$121,125																							\$121,125												
6.3	357193	B3019 Hurricane Mitigation - Roof and Exterior Wall Retrotting	0	0	0	17400	False	SF	\$36.50	\$635,100	\$635,100																							\$635,100												
6.4	356345	B2011 Stucco, Painted, Exterior, 1-2 Stories, Repair	0	0	0	452	False	SF	\$18.20	\$8,226	\$8,226																							\$8,226												
6.4	356346	B2011 Exterior Wall Paint, 1-2 Stories, Prep & Paint	10	8	2	9030	False	SF	\$2.87	\$25,916	\$25,916			\$25,916																				\$25,916												
6.6	356184	B0031 Metal, Sliding, Motor-Operated, Exterior Door, Replace	30	21	9	2	False	EA	\$11,307.69	\$22,615	\$22,615											\$22,615													\$22,615											
6.6	356185	B2032 Steel, Exterior Door, Replace	25	20	5	3	False	EA	\$950.12	\$2,850	\$2,850							\$2,850																\$2,850												
6.8	356195	C3012 Gypsum Board/Plaster/Metal, Interior Wall, Prep & Paint	10	7	3	16800	False	SF	\$1.60	\$26,880	\$26,880				\$26,880											\$26,880								\$26,880												
6.8	356186	C3012 Wallpaper, Interior Wall Finish, Replace	15	14	1	1500	False	SF	\$2.62	\$3,930	\$3,930			\$3,930																				\$3,930												
6.8	356192	C3024 Ceramic Tile Flooring, Repair	0	0	0	1300	False	SF	\$24.90	\$32,370	\$32,370																							\$32,370												
6.8	356191	C3024 Quarry Tile Flooring, Replace	50	48	2	5000	False	SF	\$15.19	\$88,102	\$88,102			\$88,102																				\$88,102												
6.8	356201	C3024 Ceramic Tile Flooring, Repair	0	0	0	400	False	SF	\$24.90	\$9,960	\$9,960																							\$9,960												
6.8	356180	C3025 Carpet, Standard Commercial, Medium Traffic, Replace	10	9	1	4600	False	SF	\$12.82	\$58,972	\$58,972																							\$58,972												
6.8	356182	C3032 Acoustical Tile Ceiling, Replace	20	20	0	13000	False	SF	\$4.80	\$62,400	\$62,400																							\$62,400												
7.1	356538	D3052 Package Unit, Single Zone, 8 to 10 Ton, Replace	15	8	9	1	False	EA	\$18,554.44	\$18,554	\$18,554																							\$18,554												
7.1	356533	D3052 Package Unit, Single Zone, 5 Ton, Replace	15	14	1	1	False	EA	\$11,239.29	\$11,239	\$11,239																							\$11,239												
7.1	356536	D3052 Package Unit, Single Zone, 16 to 20 Ton, Replace	15	6	9	1	False	EA	\$36,777.37	\$36,777	\$36,777																								\$36,777											
7.1	356534	D3052 Package Unit, Single Zone, 21 to 25 Ton, Replace	15	15	0	1	False	EA	\$44,378.70	\$44,378	\$44,378																							\$44,378												
7.1	356531	D3052 Package Unit, Single Zone, 5 Ton, Replace	15	6	9	2	False	EA	\$11,239.29	\$22,479	\$22,479																								\$22,479											
7.1	356535	D3052 Package Unit, Single Zone, 3 Ton, Replace	15	14	1	1	False	EA	\$9,871.90	\$9,872	\$9,872																								\$9,872											
7.1	356537	D3052 Package Unit, Single Zone, 3 Ton, Replace	15	6	9	1	False	EA	\$9,871.90	\$9,872	\$9,872																								\$9,872											
7.2	356343	D2023 Domestic Boiler, Gas, 260 to 500 MBH, Replace	22	20	2	1	False	EA	\$20,417.07	\$20,417	\$20,417			\$20,417																					\$20,417											
7.2	356539	D2023 Water Storage Tank, 80 to 150 GAL, Replace	20	11	9	1	False	EA	\$2,140.56	\$2,141	\$2,141												\$2,141												\$2,141											
7.2	356540	D2023 Water Heater, Gas, Residential, 51 to 120 GAL, Replace	10	8	2	1	False	EA	\$3,528.93	\$3,529	\$3,529			\$3,529												\$3,529								\$3,529												
7.2	356208	D2033 Floor Drain, Replace	30	29	1	6	False	EA	\$406.91	\$2,441	\$2,441																							\$2,441												
7.6	356528	D4091 Kitchen Fire Suppression System (CO2), Replace	15	6	9	1	False	EA	\$4,447.10	\$4,447	\$4,447																								\$4,447											
7.6	356541	D5037 Fire Alarm Control Panel, Multiplex, Replace	15	8	7	1	False	EA	\$4,284.35	\$4,284	\$4,284																								\$4,284											
Totals, Unescalated												\$2,966,144	\$85,555	\$137,964	\$26,880	\$0	\$155,350	\$0	\$4,284	\$0	\$116,885	\$152,500	\$58,972	\$29,445	\$26,880	\$0	\$196,878	\$24,141	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,981,879	
Location Factor (1.00)												\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Totals, Escalated (3.0% inflation, compounded annually)												\$2,966,144	\$88,121	\$146,366	\$29,373	\$0	\$180,094	\$0	\$5,269	\$0	\$152,509	\$204,947	\$81,631	\$41,982	\$39,474	\$0	\$306,729	\$38,740	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,281,378

FCA Output - Prioritization

- **Building (100% weight)**
- **Component / System (10%)**
- **Plan Type (1,000%)**
- **Remaining Useful Life (1%)**

Current Facility Weights - Priorities

Location	Priority
Jacobs Elementary School	10 - Highest
Hull High School	10 - Highest
Memorial Middle School	10 - Highest
Village Fire Station	8
Fire Department	8
Town Hall/Police Station	7
Public Library	6
Veterans/Senior Center	4
Highway Department	2

FCA Output - Facility Condition Index

The letters 'FCI' are rendered in a large, bold, blue 3D font with a slight shadow underneath, set against a white background within a thin black border.

Allows us to derive a single qualitative figure from a much larger and complex matrix of quantitative data.

A Single Number – FCI

Short term considerations

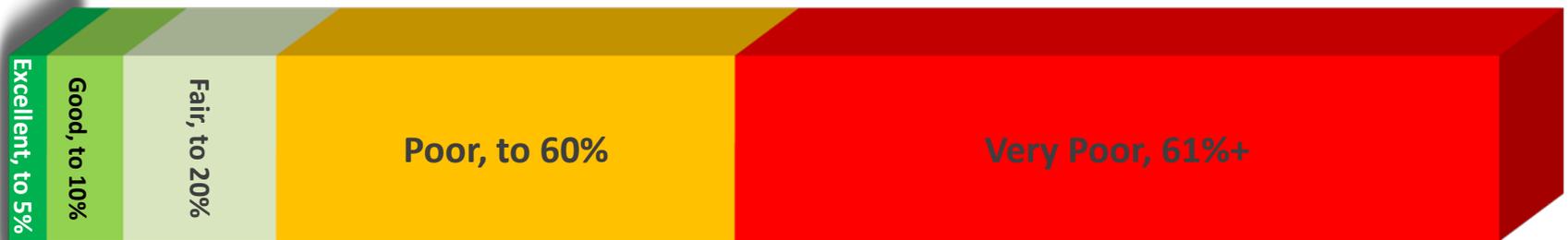
Assessors' Objectiveness

Current Replacement Value (CRV)

$$\text{(Facility Needs)} / \text{CRV} = \text{FCI (\%)}$$

Facility Condition Index (FCI)

What is the FCI percentage really telling us?





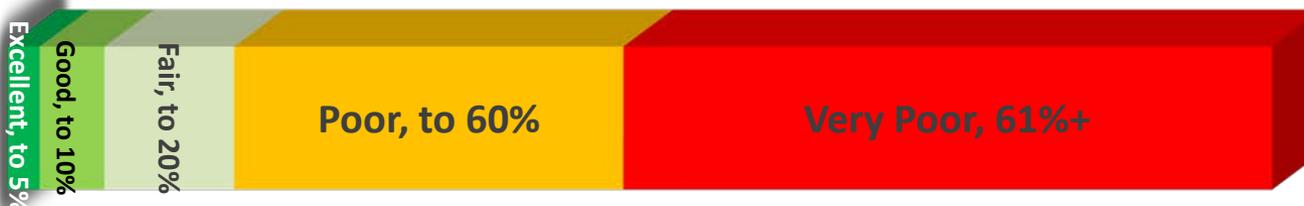
Executive Summary

Reserve Summary – 5 Year

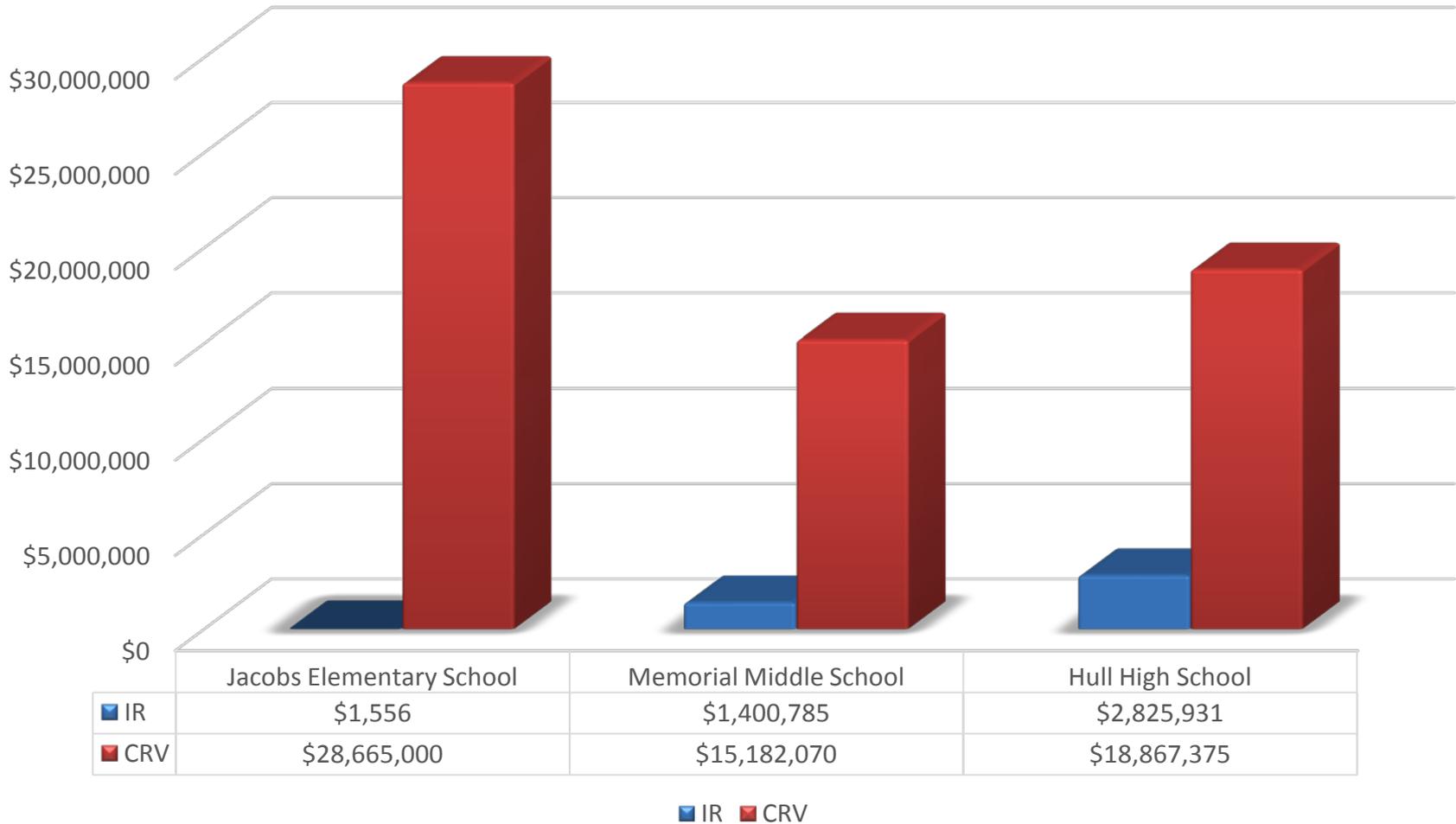
Schools		CRV	\$/SF	Current	3 yr	5 yr
Jacobs Elementary School		\$28,665,000	\$245	\$1,556	\$44,526	\$132,757
Memorial Middle School		\$15,182,070	\$230	\$1,400,785	\$2,428,431	\$2,657,838
Hull High School		\$18,867,375	\$225	\$2,825,931	\$3,603,226	\$3,603,226
Town Facilities						
Veterans/Senior Center		\$872,280	\$180	\$9,384	\$37,040	\$50,036
Fire Department		\$1,224,015	\$195	\$75,485	\$84,363	\$112,252
Public Library		\$997,710	\$210	\$235,432	\$260,822	\$299,317
Village Fire Station		\$521,040	\$195	\$149,252	\$193,912	\$196,129
Highway Departments		\$1,936,900	\$175	\$589,236	\$646,954	\$653,280
Town Hall/Police Station		\$5,613,520	\$220	\$4,315,871	\$4,315,871	\$4,432,085

FCI Summary

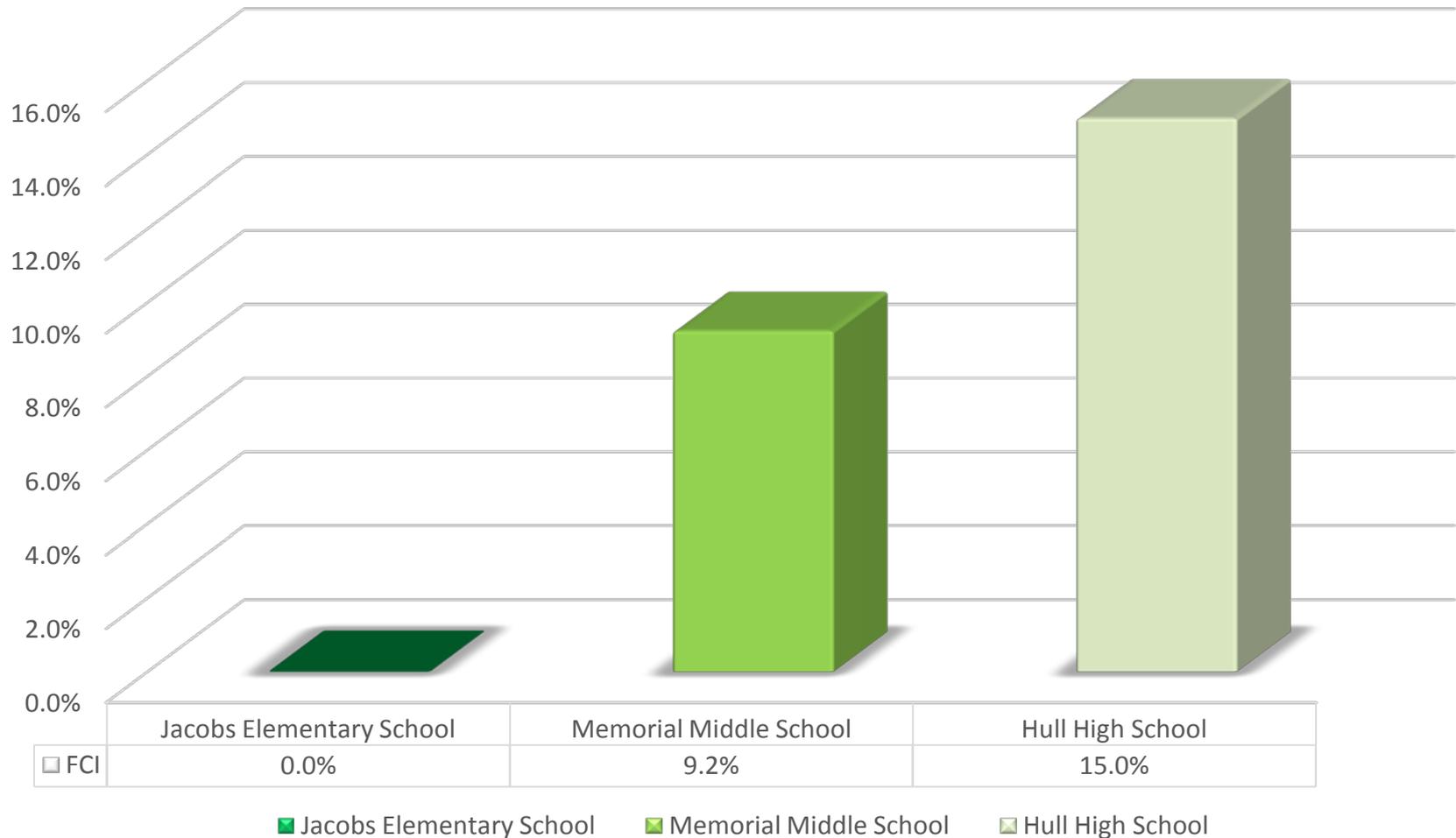
Schools	CRV	Current	3 Yr (2020)	5 Yr (2022)
Jacobs Elementary School	\$28,665,000	0.0%	0.2%	0.5%
Memorial Middle School	\$15,182,070	9.2%	16.0%	17.5%
Hull High School	\$18,867,375	15.0%	19.1%	19.1%
Town Facilities				
Veterans/Senior Center	\$872,280	1.1%	4.2%	5.7%
Fire Department	\$1,224,015	6.2%	6.9%	9.2%
Public Library	\$997,710	23.6%	26.1%	30.0%
Village Fire Station	\$521,040	28.6%	37.2%	37.6%
Highway Departments	\$1,936,900	30.4%	33.4%	33.7%
Town Hall/Police Station	\$5,613,520	76.9%	76.9%	79.0%



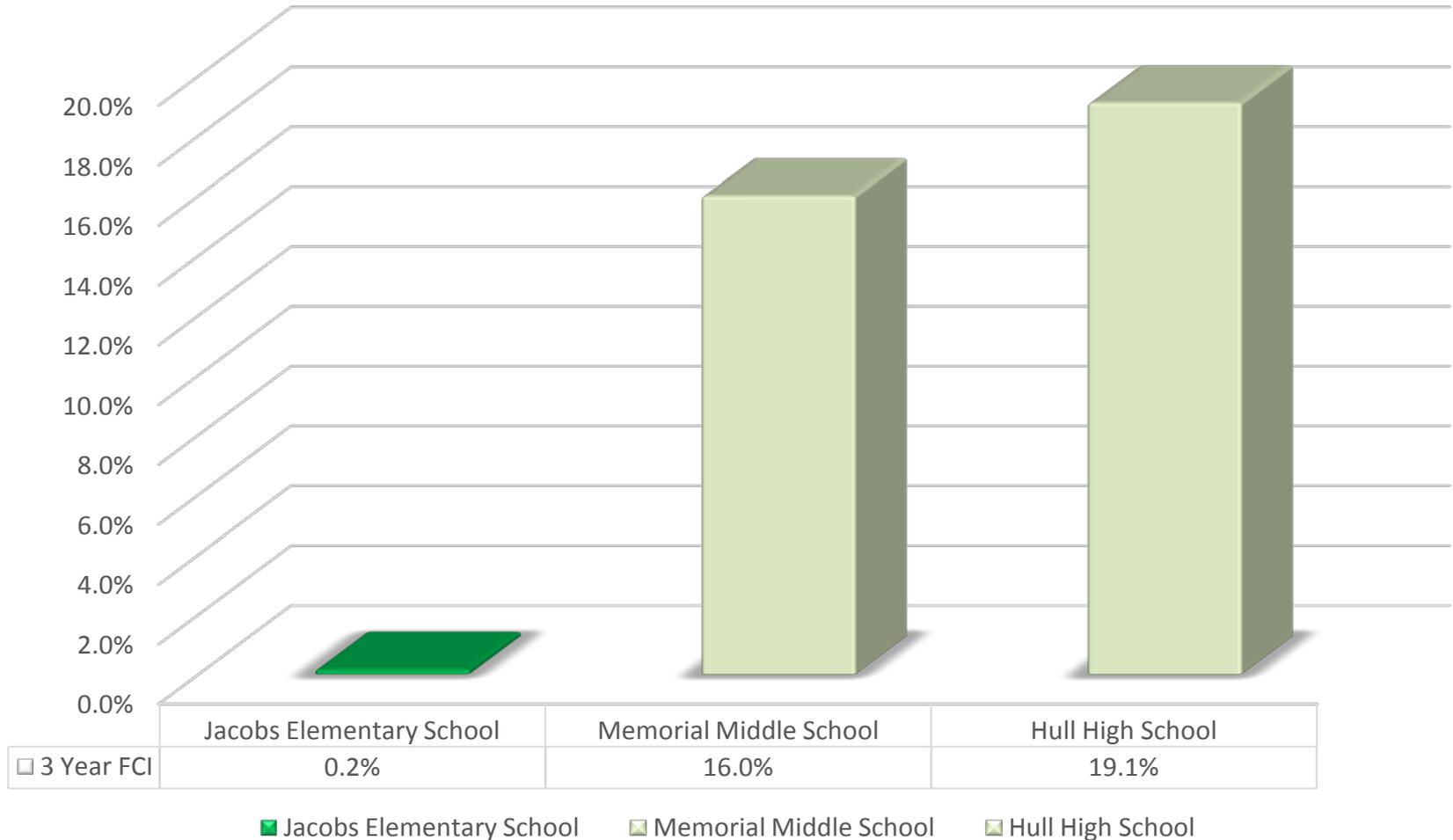
School Comparisons – Needs and CRVs



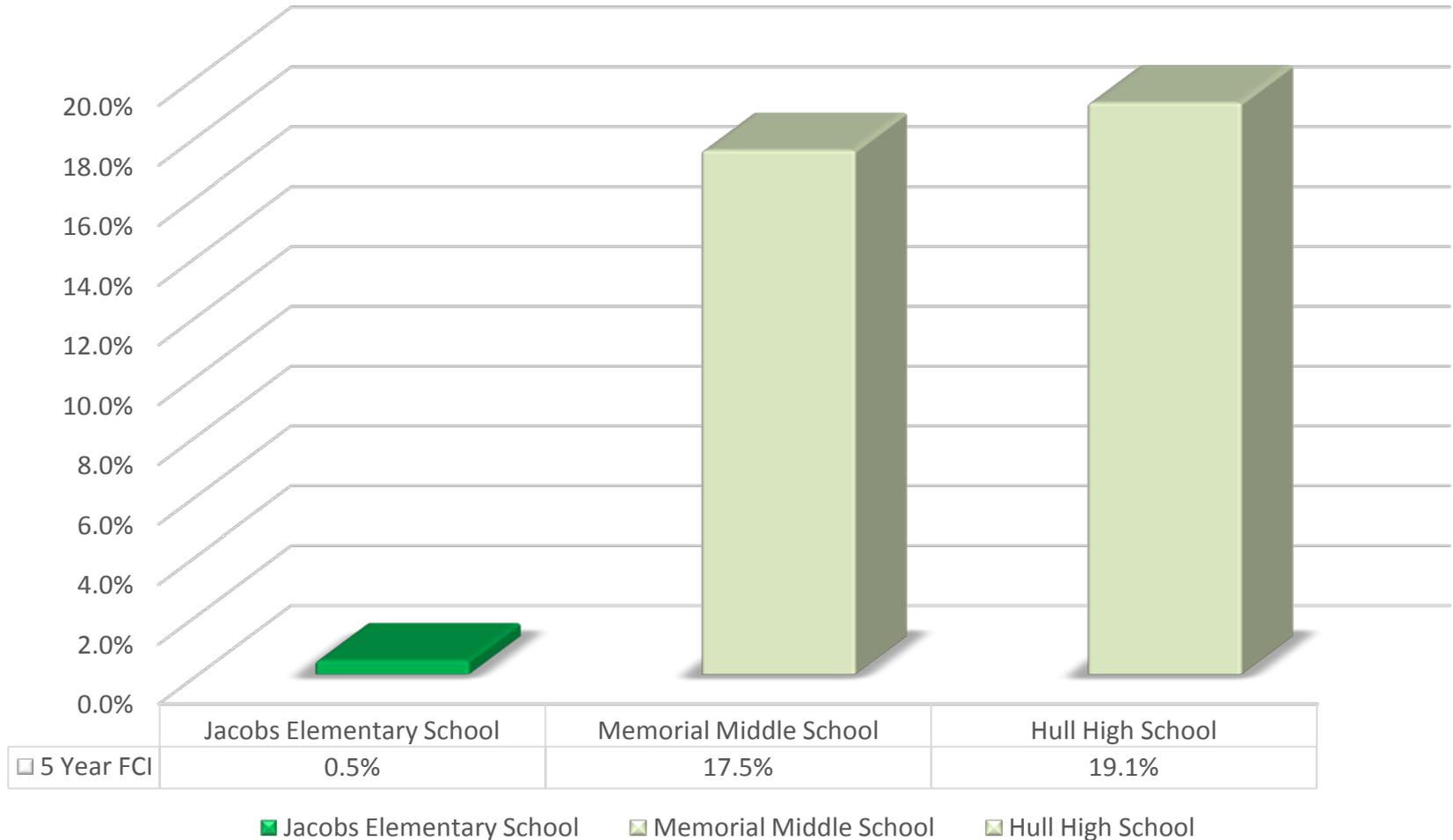
School Comparisons – FCI



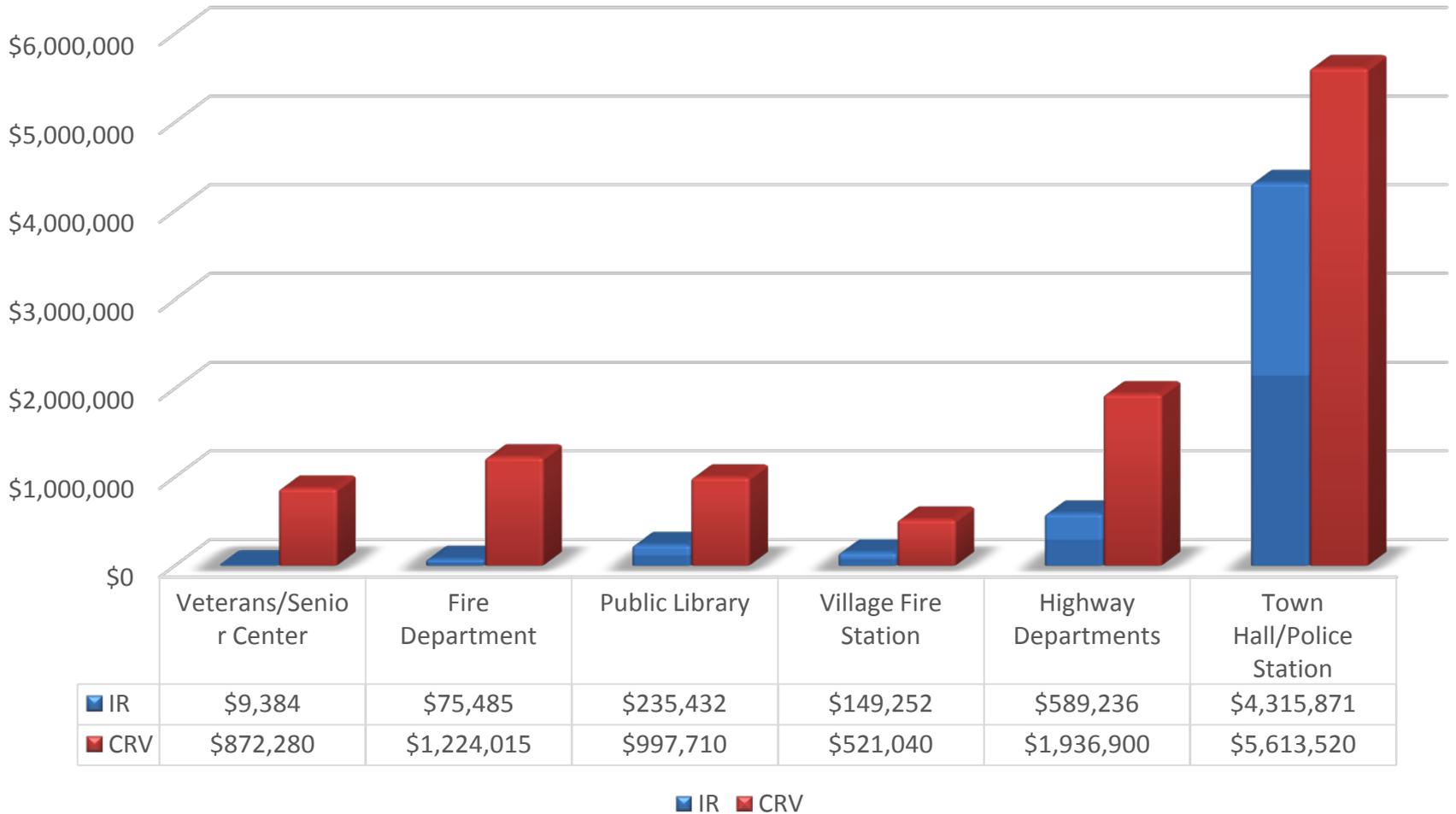
School Comparisons – 3 Year FCI



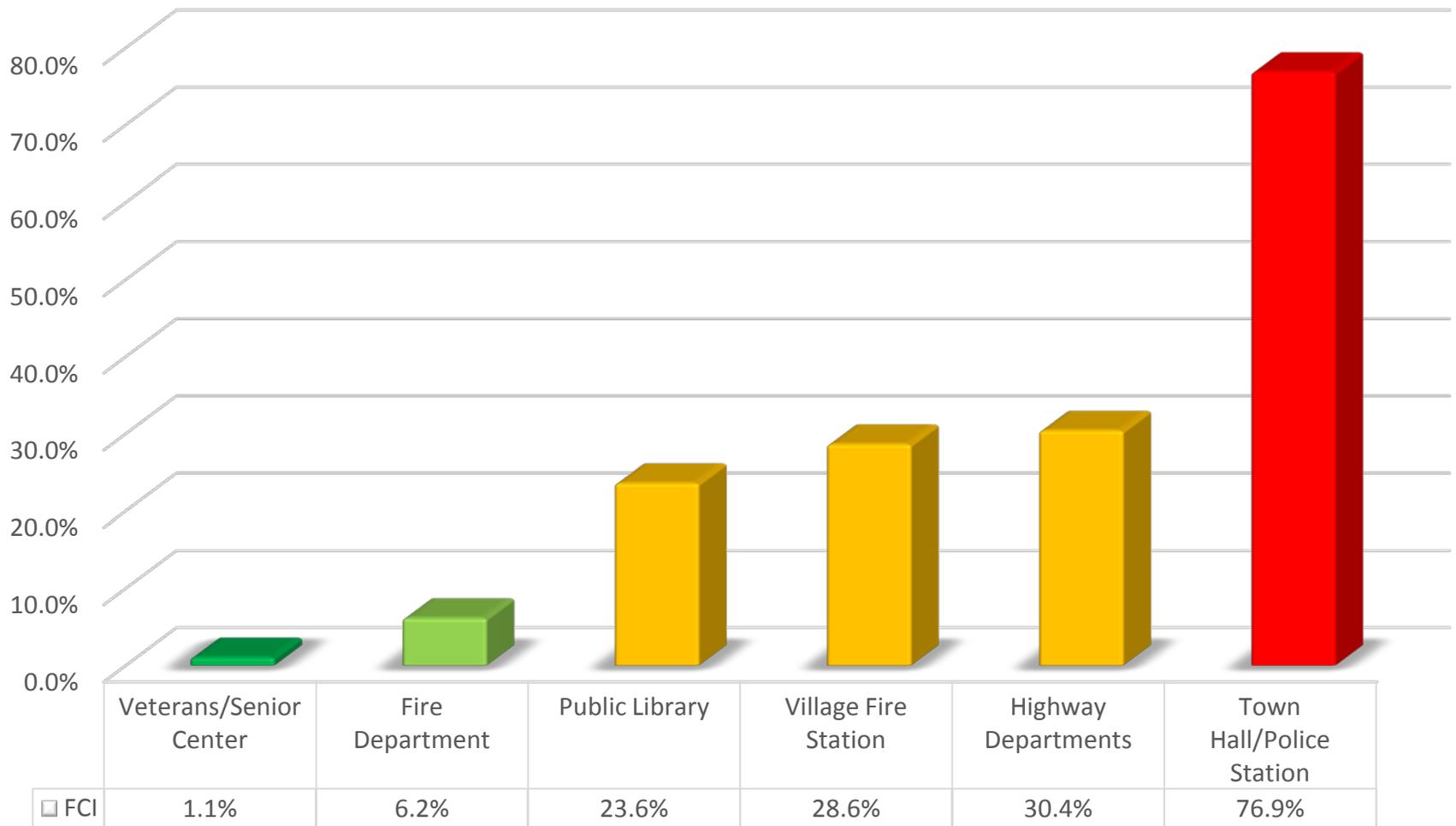
School Comparisons – 5 Year FCI



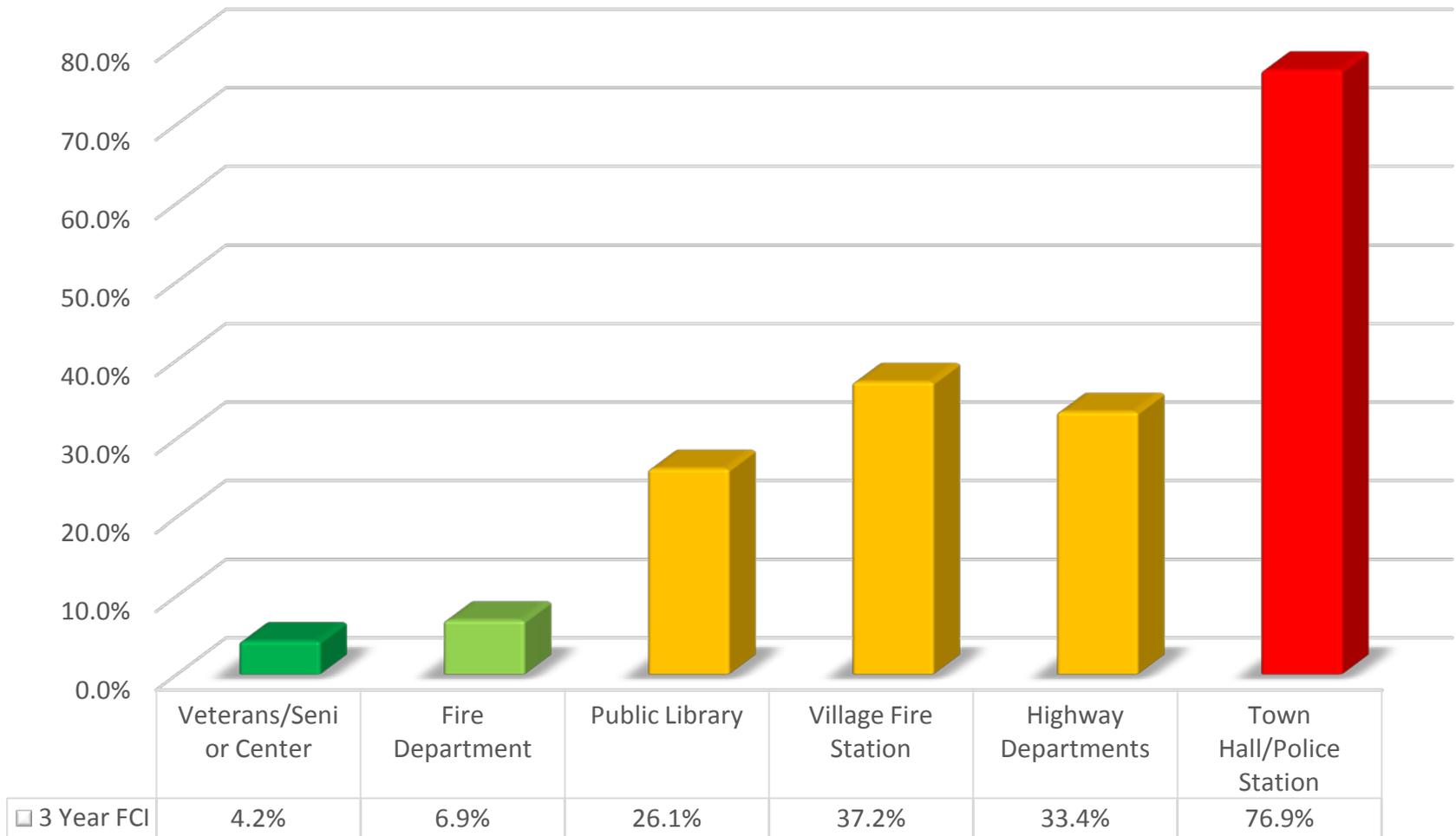
Facility Comparisons – Needs and CRVs



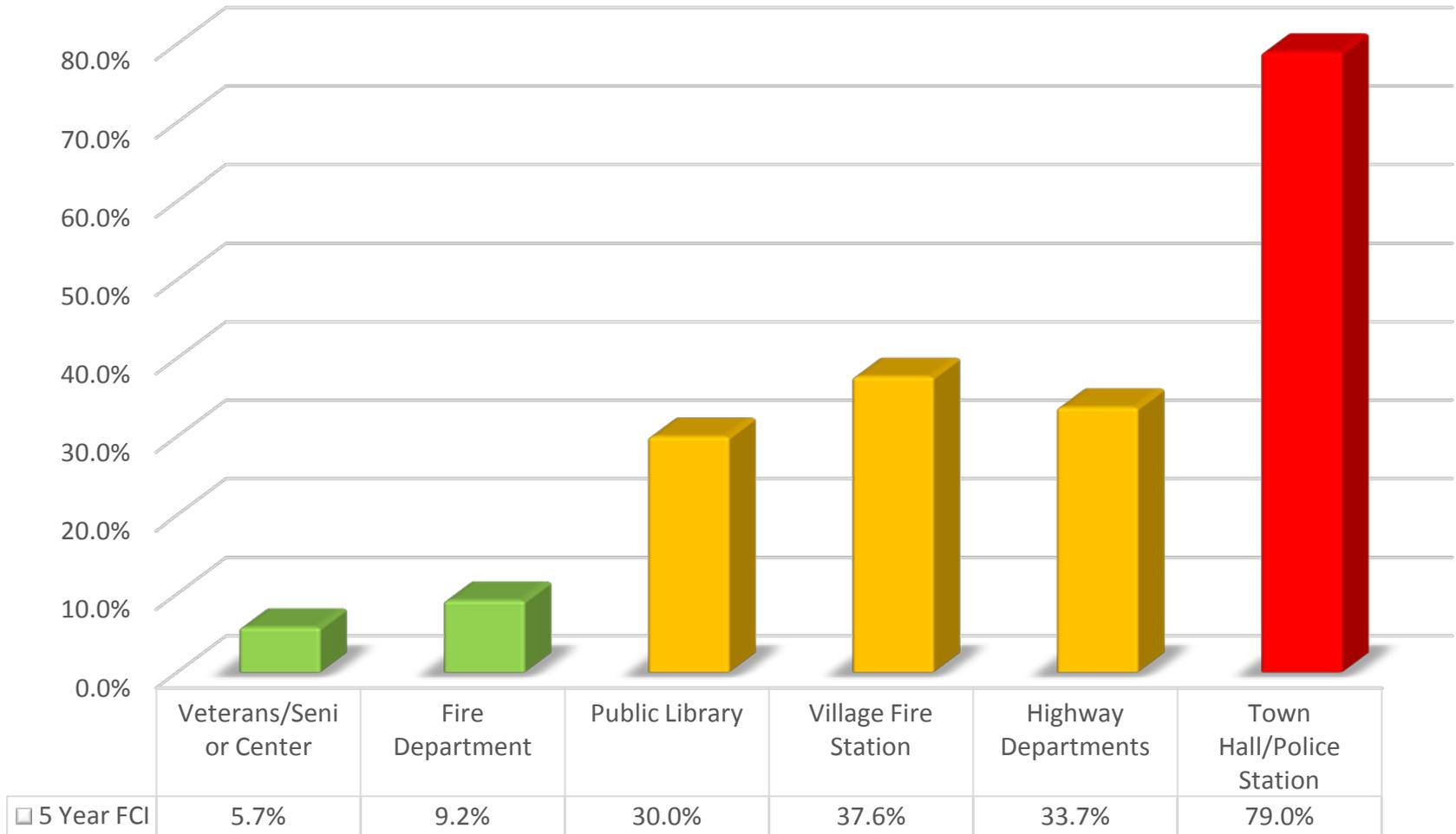
Facility Comparisons– FCI



Facility Comparisons – 3 Year FCI



Facility Comparisons – 5 Year FCI





Capital Planning / Priorities

Top 10 School Priorities

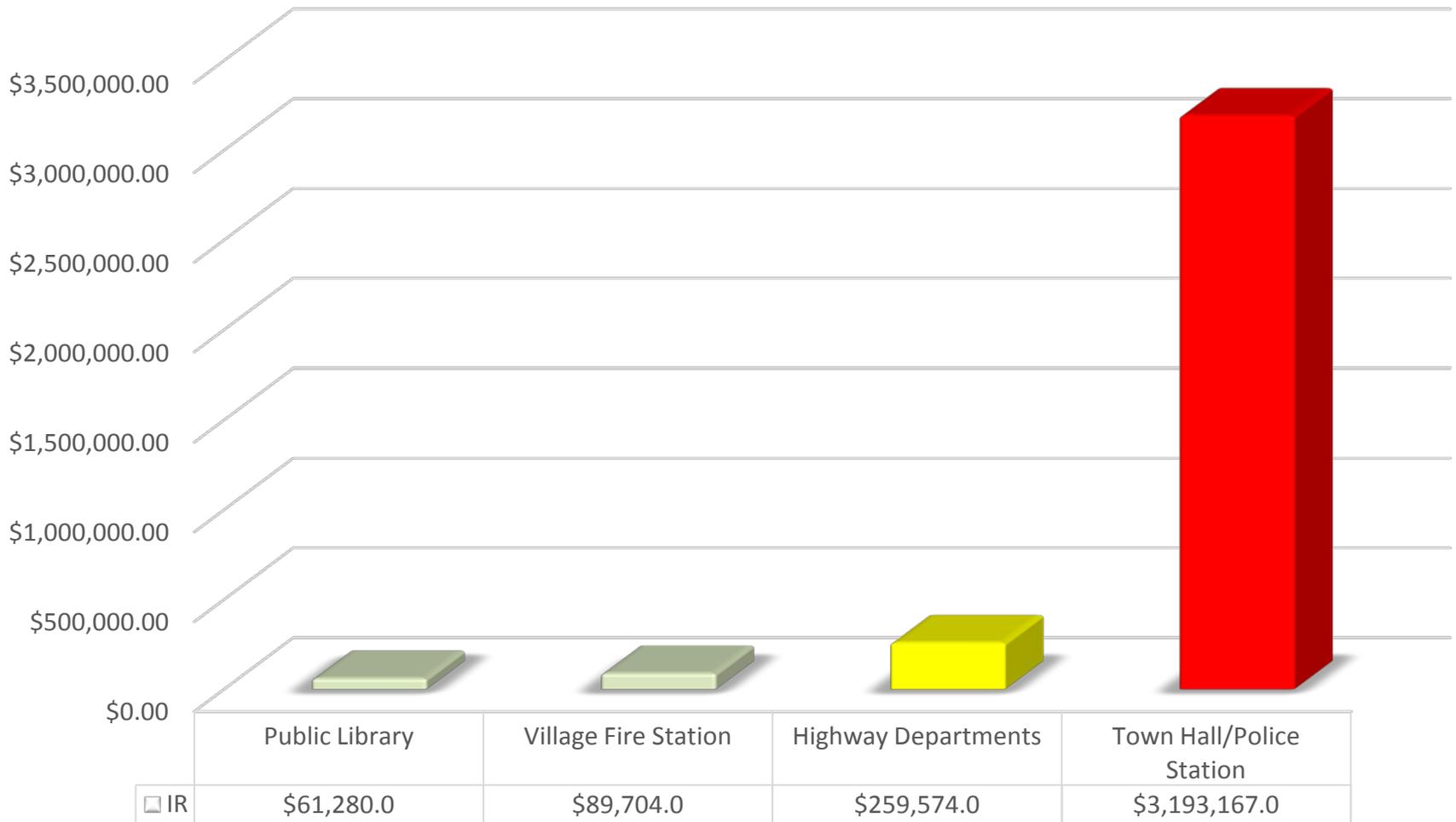
<u>ID</u>	<u>Location</u>	<u>UF Code</u>	<u>Description</u>	<u>Lifespan</u>	<u>Raw Score</u>	<u>Condition</u>	<u>First Replacement</u>	<u>Plan Type</u>	<u>Quantity</u>	<u>Unit</u>	<u>Cost</u>
455457	Hull High School	G2012	Roadways, Asphalt Pavement, Full Depth (includes sub-base), Repair	(No Lifespan)	89.64	Poor	2017	Safety	22,500	SF	\$156,150
455455	Hull High School	G2012	Roadways, Asphalt Pavement, Full Depth (includes sub-base), Repair	(No Lifespan)	89.64	Poor	2017	Safety	32,000	SF	\$222,080
461771	Memorial Middle School	B1015	Exterior Stairs, Concrete, Repair	(No Lifespan)	80.98	Poor	2017	Performance/Integrity	1,000	SF	\$3,875
461744	Memorial Middle School	B3011	Roof, Slate, Replace	50	80.96	Poor	2017	Performance/Integrity	19,000	SF	\$1,235,000
455498	Hull High School	B2011	Exterior Wall, Brick or Brick Veneer, 1-2 Stories, Repoint	25	80.95	Poor	2017	Performance/Integrity	47,860	SF	\$1,975,785
455505	Hull High School	B2011	Exterior Wall, Joint Expansion Cover/Assembly up to 2", Aluminum, Remove & Replace	20	80.94	Poor	2017	Performance/Integrity	200	LF	\$7,660
455509	Hull High School	B2011	Exterior Wall, Joint Caulking 0" to 1/2", 3+ Stories, Remove & Replace	10	80.90	Poor	2017	Performance/Integrity	15,500	LF	\$47,895
461774	Memorial Middle School	B2011	Exterior Wall, Joint Caulking 1/2" to 1", 3+ Stories, Remove & Replace	10	80.90	Poor	2017	Performance/Integrity	15,000	LF	\$84,450
455486	Hull High School	D5022	Metal Halide Lighting Fixture, Wall Mount, 150 W, Replace	20	80.76	Poor	2017	Performance/Integrity	18	EA	\$12,212

Top 10 Town Facility Priorities

<u>ID</u>	<u>Location</u>	<u>UF Code</u>	<u>Description</u>	<u>Lifespan</u>	<u>Raw Score</u>	<u>Condition</u>	<u>First Replacement</u>	<u>Plan Type</u>	<u>Quantity</u>	<u>Unit</u>	<u>Cost</u>
465210	Fire Department	B1015	Exterior Stairs, Metal, Replace	40	88.10	NA	2017	Safety	100	SF	\$4,453
469884	Highway Department	D5037	Fire Alarm System, Multi-Family, Upgrade/Install	20	82.46	NA	2017	Safety	11,000	SF	\$24,067
469119	Highway Department	D3042	Exhaust Fan, Roof Mounted, 10,001 to 20,000 CFM, Replace	15	82.45	NA	2017	Safety	1	EA	\$11,572
469104	Highway Department	P000X	Engineer, Fire Protection, System, Evaluate/Report	(No Lifespan)	82.05	NA	2017	Safety	1	EA	\$6,958
464920	Village Fire Station	B3011	Roof, Asphalt Shingle Premium Grade, Replace	30	79.17	Poor	2017	Performance/Integrity	2,200	SF	\$11,088
464919	Village Fire Station	B2011	Exterior Wall, Vinyl Siding, 1-2 Stories, Replace	25	79.16	Poor	2017	Performance/Integrity	3,200	SF	\$67,200
464939	Village Fire Station	B1015	Exterior Stairs, Wood, Replace	15	79.14	Poor	2017	Performance/Integrity	100	SF	\$3,693
464923	Village Fire Station	B2021	Window, Wood 12 SF, 1-2 Stories, Replace	30	78.99	Poor	2017	Performance/Integrity	25	EA	\$17,997
464925	Village Fire Station	D5092	Generator, Gas or Gasoline, 7 to 9 kW, Replace	25	78.99	Poor	2017	Performance/Integrity	1	EA	\$15,450
464928	Village Fire Station	B3016	Gutters & Downspouts, Aluminum w/ Fittings, Replace	10	78.94	Poor	2017	Performance/Integrity	200	LF	\$1,674

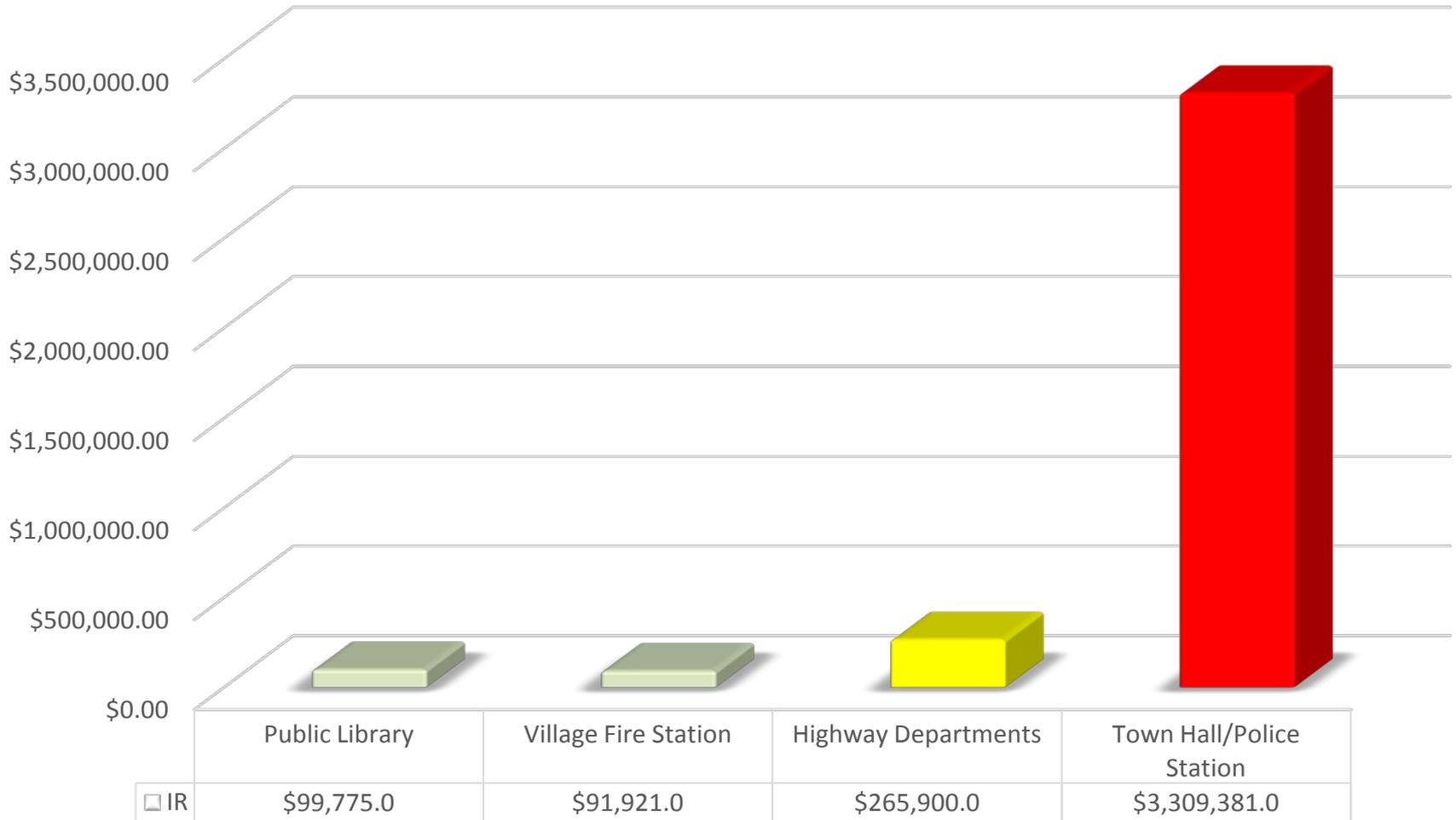
Minimum Funding Req.to Retain Fair Cond.

Deferred all Costs thru Year 3

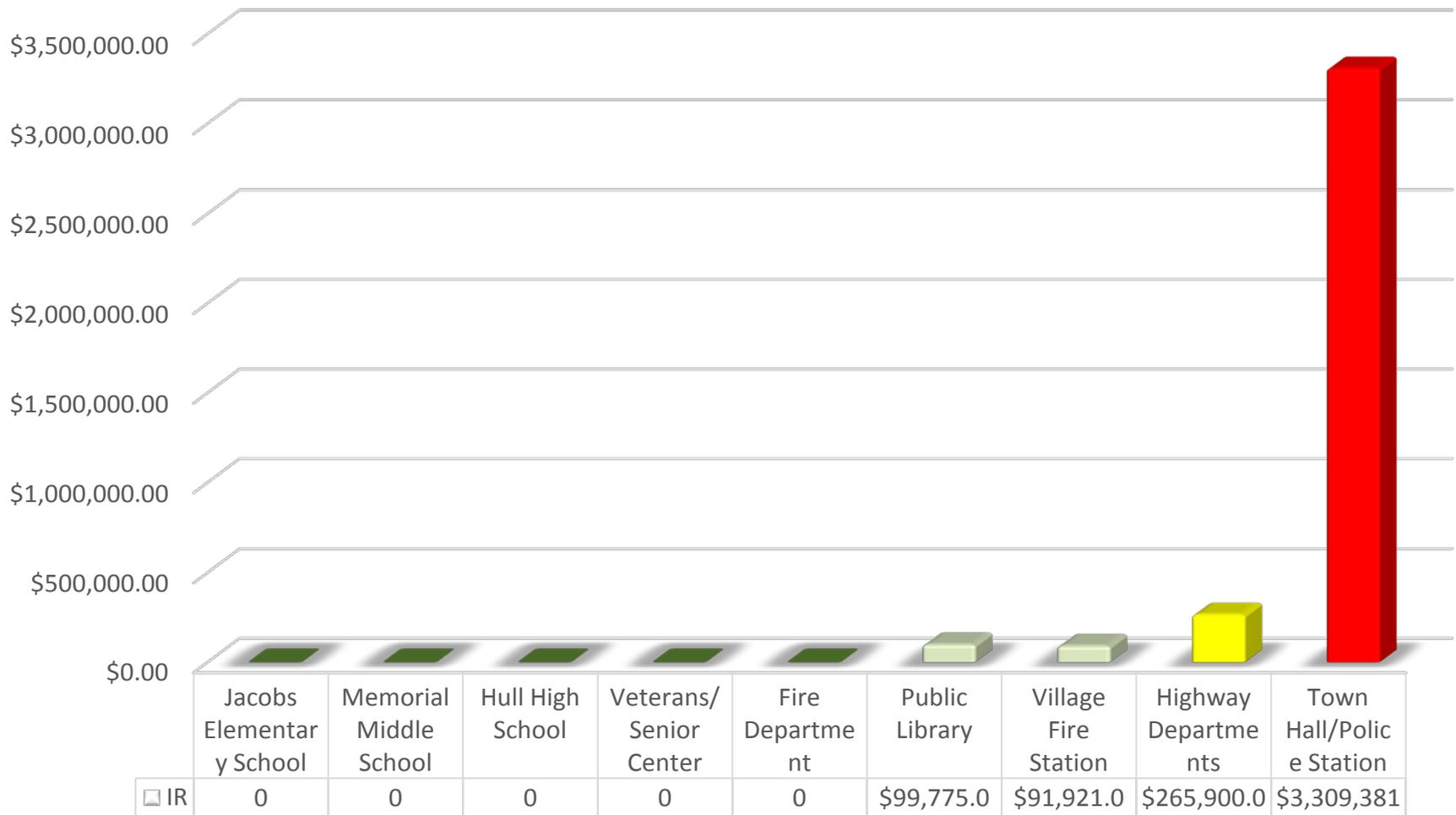


Minimum Funding Req.to Retain Fair Cond.

Deferred all Costs thru Year 5



Minimum Funding Required to Retain Fair Condition at Year 5





engineering | environmental | capital planning | project management

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Thank you for viewing

If you have any questions, please contact **Edward Beeghly**, Asset Management Director with EMG at EBeeghly@EMGCorp.com or voice at 800.733.0660 ext. 7607