



City of Pensacola

City Council Workshop

Agenda

City of Pensacola
222 W. Main Street
Pensacola, FL 32502

February 23, 2026, 3:30 PM

Hagler-Mason Conference Room, 2nd Floor

The meeting can be watched via live stream at cityofpensacola.com/video.

ROLL CALL

SELECTION OF CHAIR

DETERMINATION OF PUBLIC INPUT

DISCUSSION

1. 26-266 STORMWATER UTILITY FEE

Recommendation: That City Council conduct a workshop, whose topic is the Stormwater Utility Fee.

Sponsors: Allison Patton, Council President

Attachments: *Pensacola_StormwaterIAWorkshop_02232026*

ADJOURNMENT

If any person decides to appeal any decision made with respect to any matter considered at such meeting, he will need a record of the proceedings, and that for such purpose he may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.

The City of Pensacola adheres to the Americans with Disabilities Act and will make reasonable accommodations for access to City services, programs and activities. Please call 850-435-1606 (or TDD 850-435-1666) for further information. Request must be made at least 48 hours in advance of the event in order to allow the City time to provide the requested services.



City of Pensacola

222 West Main Street
Pensacola, FL 32502

Memorandum

File #: 26-266

City Council

2/23/2026

DISCUSSION

SPONSOR: Allison Patton, Council President

SUBJECT:

STORMWATER UTILITY FEE

SUMMARY:

During the discussion of the Stormwater Utility Fee, City Council expressed a desire to explore the various options in determining the impervious areas of the parcels within the City of Pensacola as well as review the categories of how the parcels are billed.

The Raftelis firm has been contracted to view the City of Pensacola's current methodology of both billing and determining the impervious areas in comparison to the various options available to the City. Raftelis specializes in working with local governments in various aspects such as finance, assessment, technology, strategic planning, stormwater utility services and solid waste services. In regards to stormwater, Raftelis works with communities in various ways from setting up new utilities and fees and modifying existing rate structures.

Raftellis will provide a presentation to City Council to review how the City is currently assessing the Stormwater Fee and the technology available for use in the future.

PRIOR ACTION:

August 14, 2025 - City Council adopted Resolution No. 2025-48 Imposing the Stormwater Assessments and Approval of the 2025 Stormwater Assessment Roll

FUNDING:

N/A

FINANCIAL IMPACT:

None

STAFF CONTACT:

Don Kraher, Council Executive

Yvette McLellan, Special Assistant to the Council Executive

ATTACHMENTS:

1. Pensacola_StormwaterIAWorkshop_02232026

PRESENTATION: Yes



City of Pensacola

Stormwater Rate Structure and Impervious Area Workshop

February 23, 2025



Image Credit: <https://www.facebook.com/photo.php?fbid=1168518628634800&set=pb.100064300225378.-2207520000&type=3>



Agenda

1. Introductions
2. Stormwater Utility Overview
3. Pensacola's Current Rate Structure and Data
4. Impervious Area Methodology Options
5. Next Steps and Potential Timeline Considerations
6. Wrap Up Summary
7. Discussion Session

Our Speakers



Katie Cromwell, MBA

Vice President
Raftelis



Christina Conchilla

Manager
Raftelis

STORMWATER UTILITY OVERVIEW



Stormwater Utility

1

Distinct fiscal entity

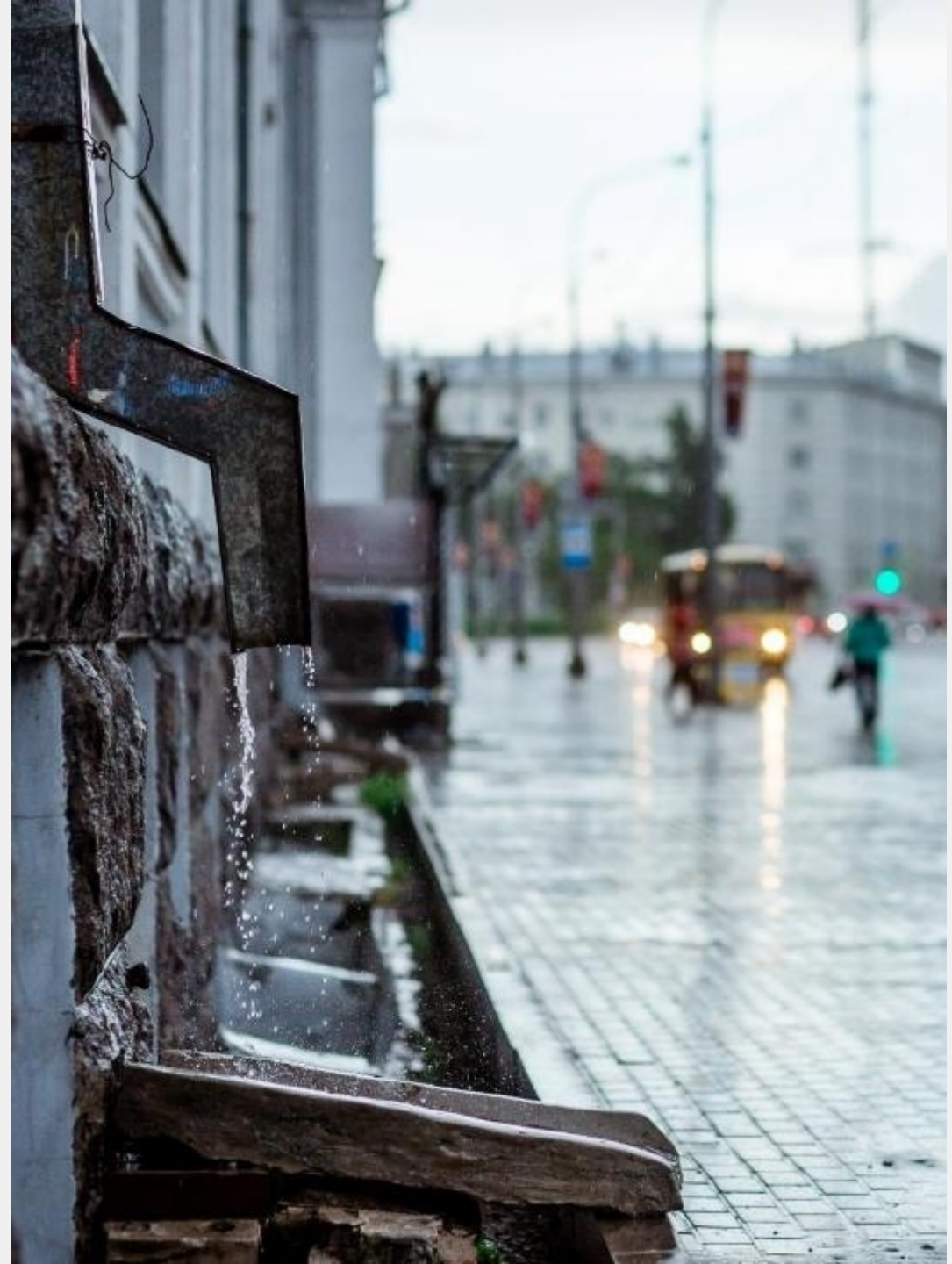
Funding often generated through fees based on property characteristics

2

Defined service provision

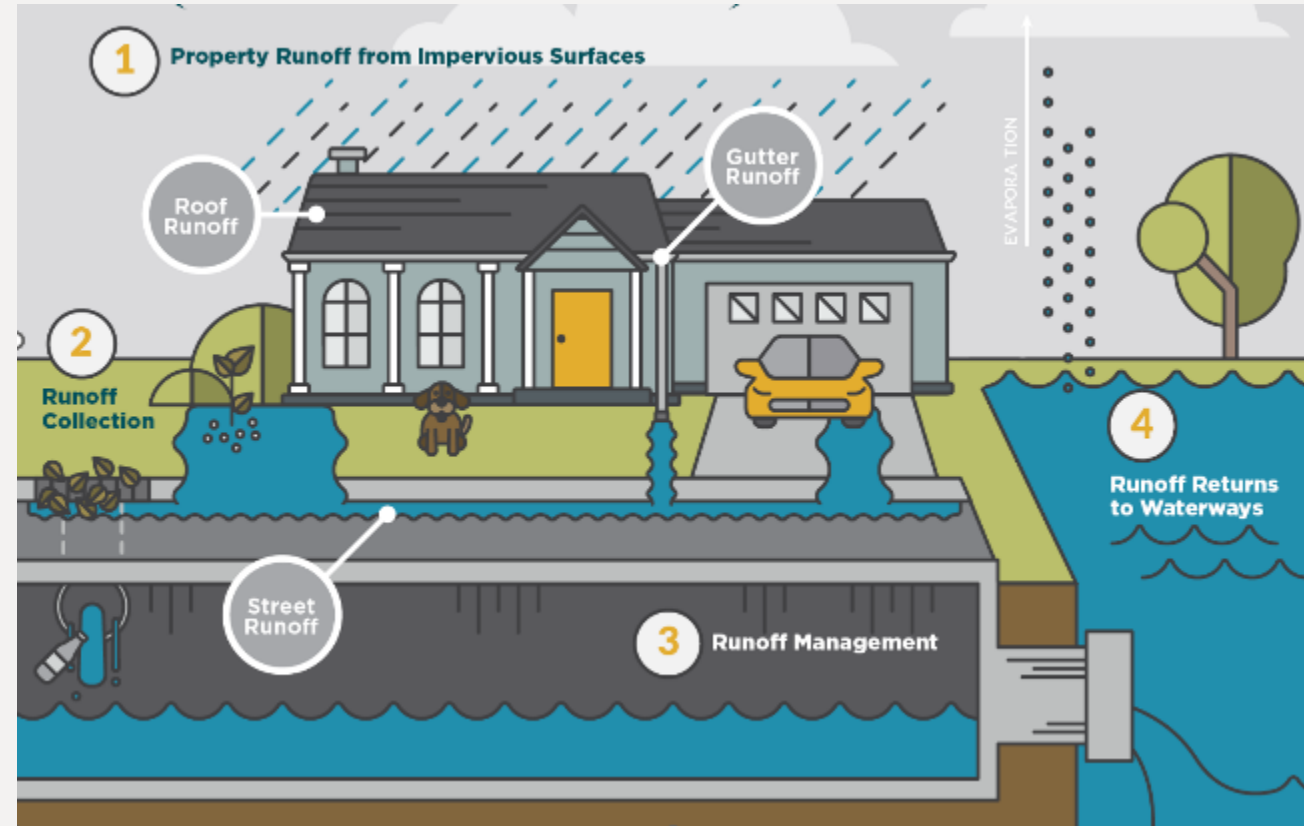
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Organizational structure (even if decentralized)



Basis for Stormwater Fees

- Typically, local government/municipal fees are charged based on some measure of use
- For stormwater we can't measure how much stormwater your property contributes
- Industry standard is to use property characteristics including hard surface area (impervious area)
 - A property's IA correlates with how much stormwater runoff each property generates.
 - Properties with more IA create more runoff and place more demand on stormwater system.



Stormwater Fee Rate Structure Basics

- Stormwater fees are parcel based fees that are based on property characteristics
- Industry standard is for the fee to be based on impervious surface area
- For the purposes of a stormwater fee, many communities use customer classifications that include
 - › single family residential (SFR)
 - › non-single family residential (NSFR)
 - › multi-family residential and/or single-family attached (sometimes)
- Stormwater fees are often billed in units of charge that are based on an equivalent residential units or per 1,000 sq. ft. of impervious area

Equivalent Residential or Stormwater Unit (ERU/ESU)



- Billing unit for IA based rate structures
- Community specific
- Median IA on **Single-family residential (SFR)** properties

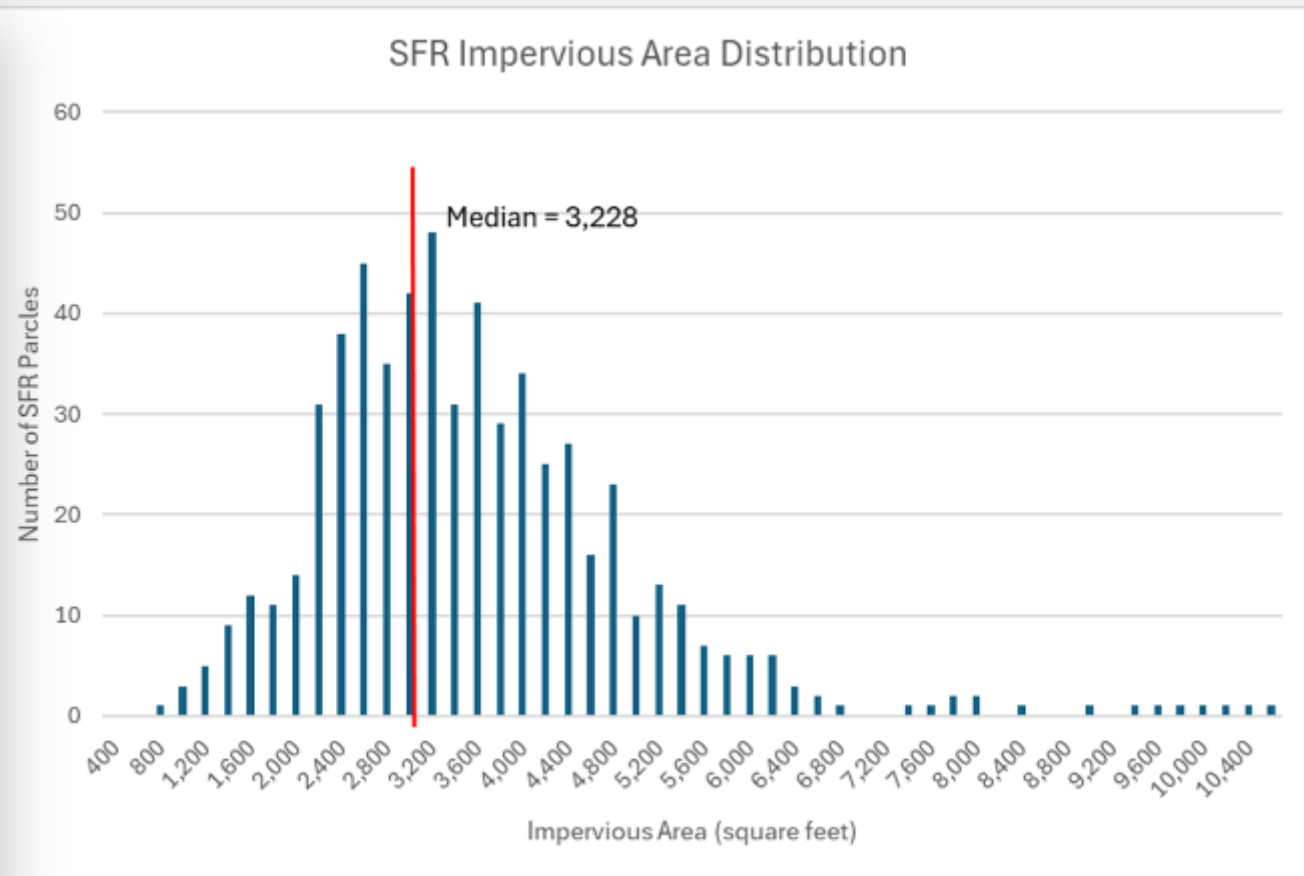
Single Family Residences (SFRs)

- Use Tax Parcel or Billing Data to determine
- Single dwelling unit on individually owned lot
- Some utilities may also opt to include 2-unit to 5-unit properties in this customer class

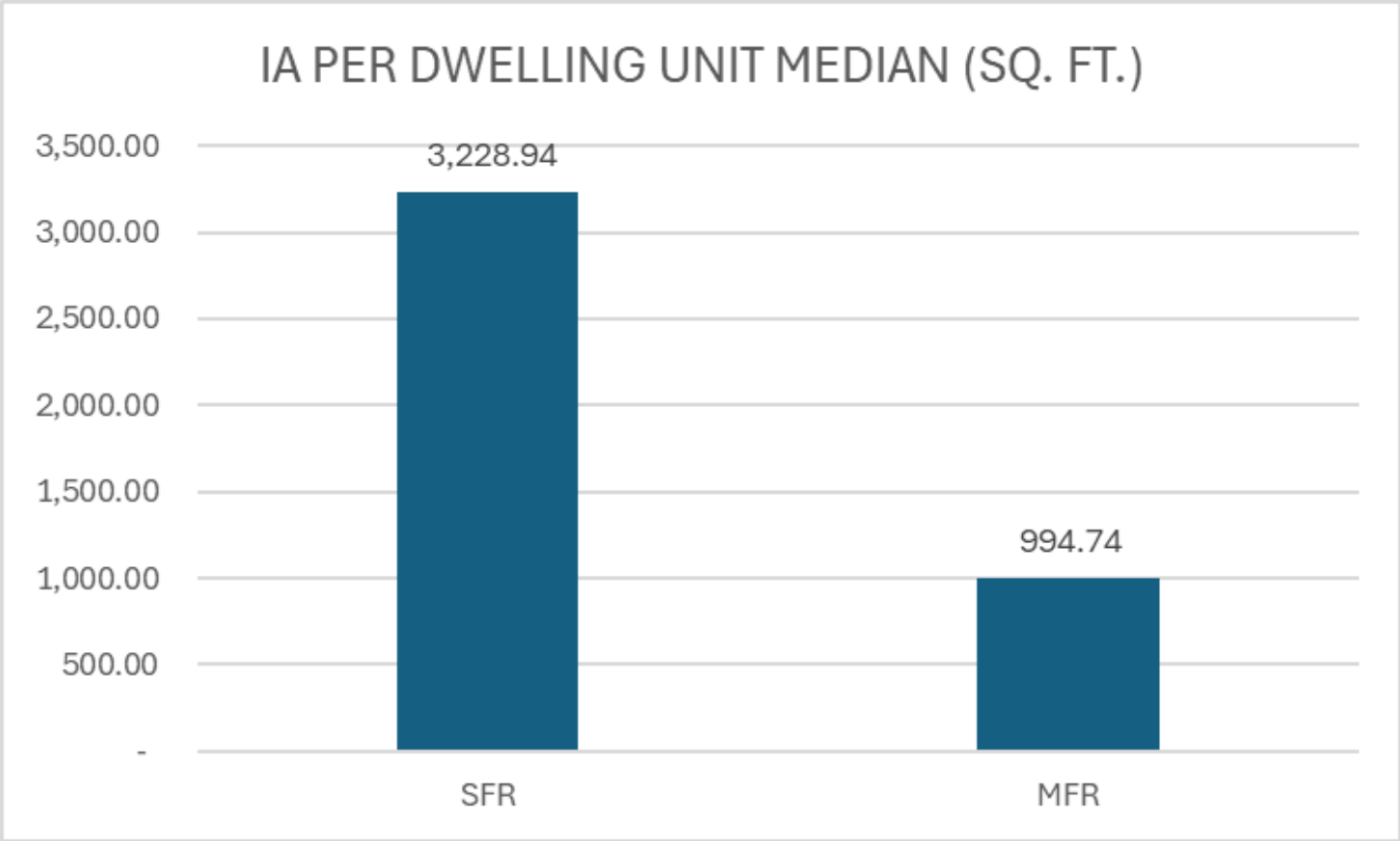


SFRs cont'd

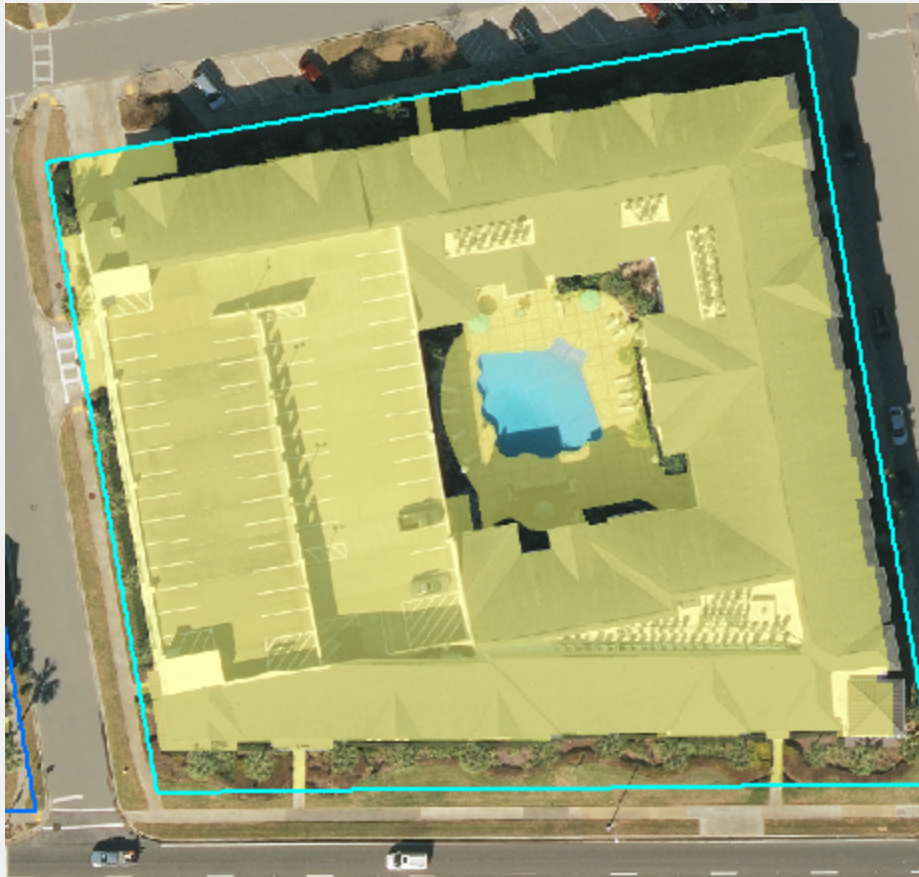
- **Common Rate Options:**
 - Flat Rate – All are Charged 1 ERU
 - Tiered Rate – placed into one of 2 or more tiers based upon IA
 - Cap – limit of IA above which property is charged proportionally to their amount of IA



SFR vs MFR – Median Values



Multi-Family Residential (MFR) Properties



- Condominiums and Cooperatives: dwelling units in same building and often on same parcel
- Share common area IA - has to be allocated to associated dwelling units
- Total IA divided by ERU/ESU value to calculate billable ERUs/ESUS – can be further allocated to dwelling units



Single-Family Attached (SFA) Properties



- Townhomes - attached units located on individual parcels – often smaller than SFR parcels
- Share common area IA – has to be allocated to associated dwelling units
- Billing can be flat rate, tiered with SFRs, class average ESU/ERU value or measured development specific ESU/ERU

Non-Single Family Residential (NSFR) Properties

- Includes all developed properties that are not single-family
- Total IA divided by ESU/ERU value to calculate billable ESUs/ERUs



PENSACOLA RATE STRUCTURE AND DATA



Pensacola's Stormwater Utility: **Overview**

- **Impervious Area Based Methodology:** Fees are based on amount of IA
- **The Base Unit (ESU):**
 - › **Definition:** 1 ESU = 2,998 sq. ft. of IA
 - › **Origin:** This represents the median impervious area of a typical single-family residence in Pensacola.
- **Current Rate (since 2024):** \$120.49 per ESU
- **Customer Classes:**
 - › **SFR**
 - › **Condominium**
 - › **General Parcel**

Pensacola's Stormwater Utility: SFR Class

- **Single-Family Residential ESU Determination:** 4 Tiers with a Cap based upon square footage of IA
 - › Total SFR Parcels: 19,809*
 - › Total SFR ESUs: 20,221.08*

Tier	Square Footage	Assigned ESUs	Annual Rate
Small	100 -1100 sq ft	0.44	\$53.02
Small-Medium	1101 - 1600 sq ft	0.68	\$81.93
Medium	1601 - 2500 sq ft	1	\$120.49
Large	2501 - 5600 sq ft	1.53	\$184.35
Very Large	Greater than 5600 sq ft	Measured	

* From 2025 Assessment Roll Data

Pensacola's Stormwater Utility: **SFR Class**

- **Single-Family Residential:**
 - › Escambia County DOR Codes '01' – Single Family and '02' – Mobile Home
 - › Appears to also include Townhome Properties
 - › According to Resolution 18-10 – “Building footprint of each Single Family Parcel constitutes a reasonable proxy for Impervious Area” and ESUs per tier are relative to building footprint IA

Pensacola's Stormwater Utility: Condominium

- **Condominium Property ESU Calculation:**
 - › $(\text{Total IA of Complex} \div 2,998) \div \text{Total Number of Units} = \text{ESU per unit}$
 - › Total Condominium Parcels: 1,230*
 - › Total Condominium ESUs: 533.82*

* From 2025 Assessment Roll Data

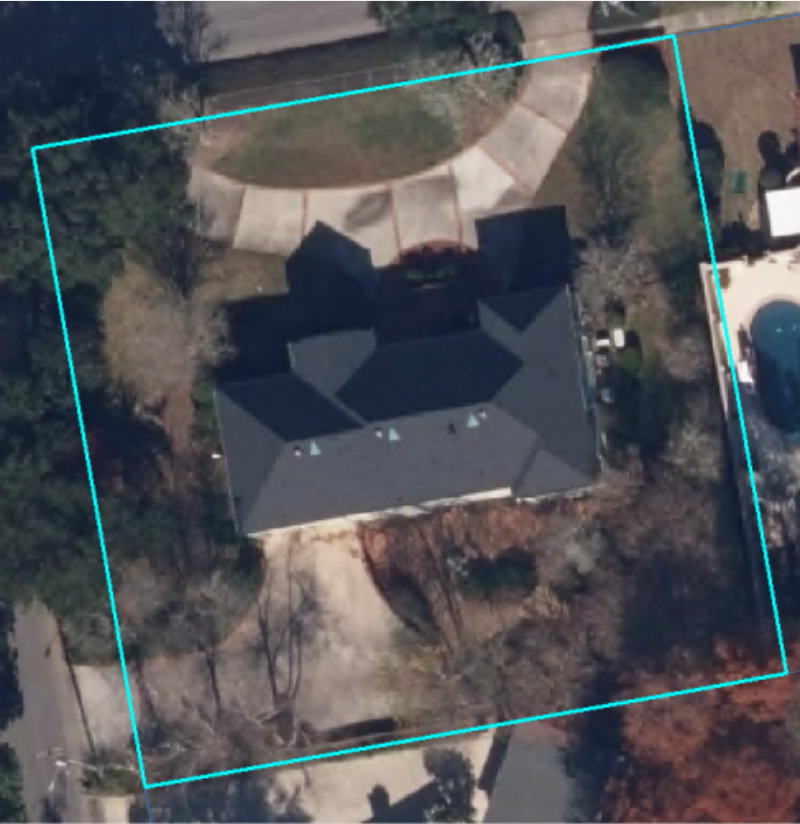
Pensacola's Stormwater Utility: General Parcel

- **General Parcel ESU Calculation:**
 - › Total IA of Complex ÷ 2,998 = Total ESUs for parcel
 - › Total General Parcel Parcels: 3,257*
 - › Total General Parcel ESUs: 18,811.47*

* From 2025 Assessment Roll Data

Pensacola Current Data Source

- Escambia County Property Appraiser - Tabular Data grouped by Parcel ID:
- Example SFR with Total IA of 4,135 sq. ft. in Tier 4
 - › Driveway and walkway IA not included



Account	Parcel ID	Building ID	Total SQ FT	Sub Area Code	Sub Are Description	Sub Area SQ FT
132489000	000S009010006169	18723	4135	BAS	BASE AREA	3325
132489000	000S009010006169	18723	4135	GRF	GARAGE FIN	576
132489000	000S009010006169	18723	4135	OPU	OPEN PORCH UNF	234

Accuracy and Equity of Current Data Source

- Missing IA from Property Appraiser:
 - › Large driveway/walkway – not captured
 - › Property Appraiser IA = 4,135 sq. ft., Tier 4, 1.53 ESU, \$184.35
 - › Measured IA and Fee = 8,392 sq. ft., Tier 5, 2.8 ESUs, \$337.37
 - › Property is being billed accurately according to current rate structure
 - › This property would fall into a higher tier if measured IA was used.



Accuracy and Equity of Current Data Source

- By comparison – a property with a similar base area in property appraiser data with a smaller driveway is being charged in correct tier
 - › Property Appraiser IA = 4,020 sq. ft., Tier 4, 1.53 ESU, \$184.35
 - › Measured IA = 5,086 sq. ft., also places in Tier 4



Account	Parcel ID	Building ID	Total SQ FT	Sub Area Code	Sub Are Description	Sub Area SQ FT
012643428	161S290450014001	40637	4020	BAS	BASE AREA	3320
012643428	161S290450014001	40637	4020	GRF	GARAGE FIN	484
012643428	161S290450014001	40637	4020	OPF	OPEN PORCH FIN	36
012643428	161S290450014001	40637	4020	OPU	OPEN PORCH UNF	180

IMPERVIOUS AREA METHODOLOGY OPTIONS



Impervious Area Methodologies

- Impervious Area is the industry standard for stormwater fees
- Methodologies for impervious area estimation and measurement vary along with the quality, accuracy, and consistency of the methods
 - › Assessing Data (Pensacola's current method)
 - › Estimation
 - Algorithmic
 - Land Use Factors
 - › Manual Digitizing
 - › AI Generated Data

Estimated Impervious Area



Parks, greenbelts factor at **35%**



Business district factors at **85%**

- Pros:
 - › Avoids data development costs
 - › Can be used as part of a hybrid methodology for some customer classifications
- Cons:
 - › No real improvement in impervious area accuracy
 - › Customer appeals can be more prevalent

Manual Digitizing

- Human generated IA data using county parcel and aerial imagery
- Recently completed projects in:
 - › Jacksonville Beach, Florida
 - › Seminole, Florida
 - › Treasure Island, Florida
 - › St. Augustine Beach, Florida
 - › And many more



Example of digitized impervious area for a non-single family residential property. Measured impervious area is shown in translucent blue.

Manual Digitizing

- Pros:
 - › Data Ownership
 - Able to Update and Maintain
 - › Highest level of accuracy
 - › Updates only required as development changes occur
 - › Suitable for public viewing, supporting high confidence in the fee
 - › Can use any high-resolution imagery source
- Cons:
 - › Higher initial cost for development
 - › Initial time investment to develop the data can be high

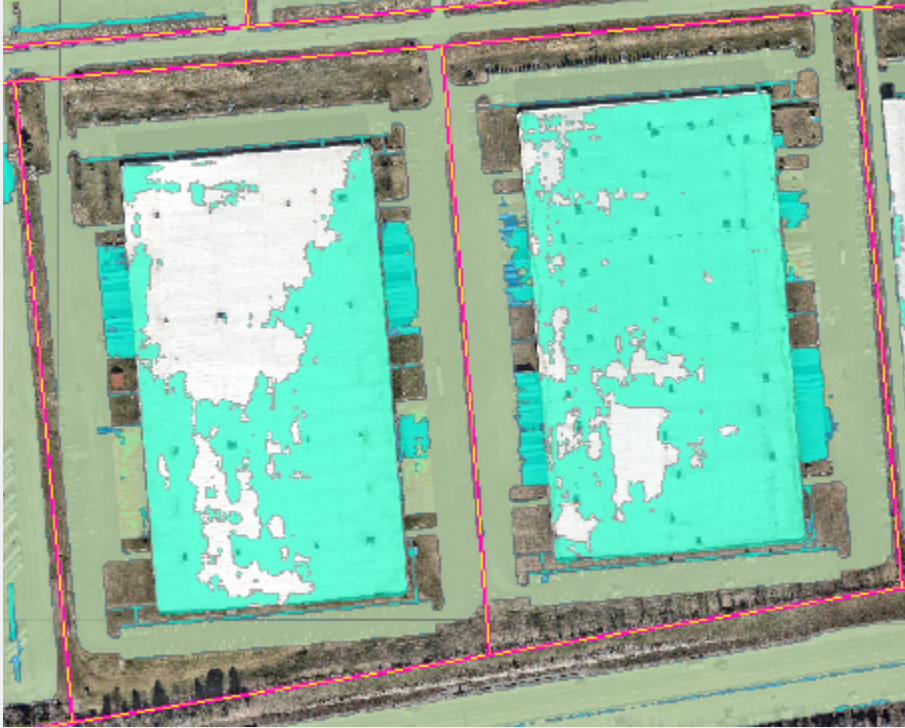
Manual Digitizing – Estimated Cost and Staffing Considerations

- Estimated costs for manual digitizing of IA on currently billed parcels:
Approximately \$190,000
- Staffing:
 - › Additional GIS and Customer Service staff hours may be required at implementation of new data and/or rate structure – customer abatement process
 - › Existing GIS staff or Consultant can maintain and update data every 2-3 years with new aerial imagery:
 - New development
 - Demolitions
 - Parcel changes (recombination or subdivisions)
 - NOT for minor shifts in aerial imagery/parcel alignment
- Data Maintenance costs estimated at approximately \$10,000-\$20,000 per year

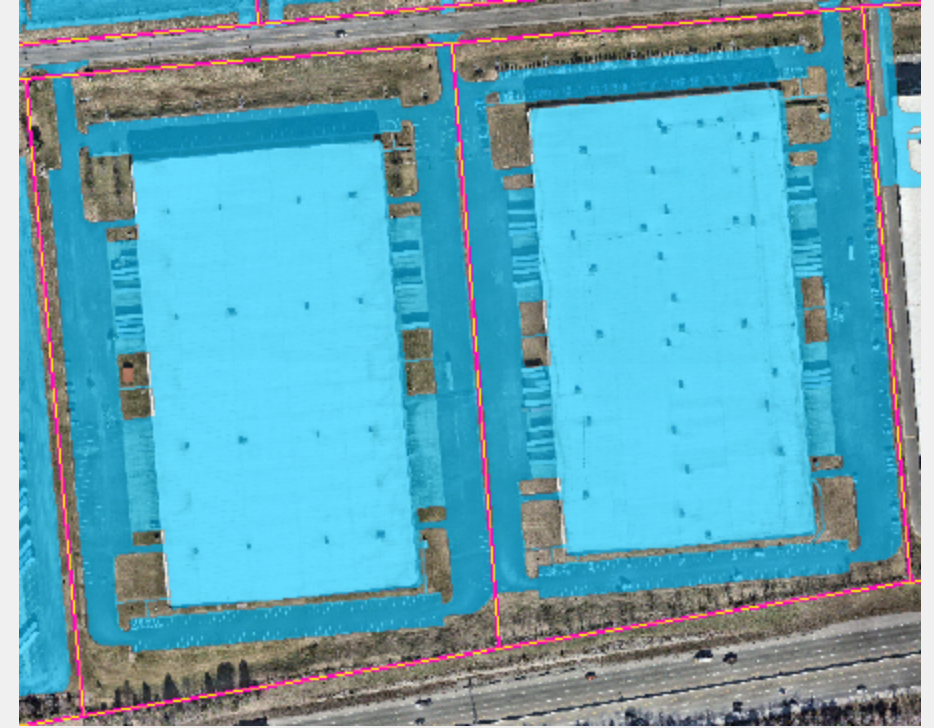
AI Generated IA Data

- Impervious area generated using AI techniques are increasing in availability and quality
- Firms that collect aerial imagery are developing impervious area data based on imagery they have collected, selling these impervious area data as derivative data products.
 - › For example, by purchasing or subscribing to their imagery, you could purchase impervious area data based on this imagery.
 - › These groups use their own proprietary machine learning techniques to develop these data derivatives
 - › Quality can vary and some have options to purchase improved quality data where the AI techniques are more custom to your community.
- Firms that do this type of work include NearMap, Ecopia, Eagleview, and others

AI Generated IA Data Options



- AI generated impervious area
- Different features shown in different colors
- Manual editing or further refinement would be required for billing



- Manually generated Impervious Area
- Single feature for impervious area
- Current data used for billing

AI Generated IA Data Options

- › Examples from Commercial property IA measurement in Holly Springs, NC



AI Generated IA Data Options

- ESRI Deep Learning
 - › Uses algorithms to refine AI generated IA data and can learn on its own but will likely need some human intervention to correct errors and learn.



Create Deep Learning
Training Samples



Esri High Resolution
Land Cover
Classification*



Esri Building Footprint
Extraction
deep learning package (.dlpk)



AI Generated IA Data Options

- Proprietary Products (Nearmap, Ecopia, EagleView, and others)
 - › Pros
 - Can be generated quickly
 - Less expensive than other alternatives, especially if you forego ownership of the data
 - Can generate data on different types of features (buildings, roofs, pavement, etc.)
 - › Cons
 - May require manual modification to be appropriate quality for billing
 - May have to change the impervious area layer as a whole, rather than make updates
 - Purchasing of associated imagery is typically required
- ESRI Deep Learning Packages
 - › Pros
 - Licenses and packages may be purchased by the public
 - Less expensive than alternatives
 - Ownership of the data
 - › Cons
 - Need higher level GIS expertise to use these tools
 - Some manual intervention is required

AI Generated IA—Estimated Cost and Staffing Considerations

- Estimated costs for AI Generated AI: Approximately \$50,000 to \$90,000 depending on type and ownership and purchase requirements
- Staffing:
 - › Additional GIS and Customer Service staff hours may be required at implementation of new data and/or rate structure – customer abatement process
 - › Data should be updated every 2-3 years:
 - New development
 - Demolitions
 - Parcel changes (recombination or subdivision)
 - NOT for minor shifts in aerial imagery/parcel alignment
- If no ownership of data, would cost \$50,000 to \$90,000 each time the impervious area is updated
- If own data, data maintenance costs estimated at approximately \$10,000-\$20,000 per year

Publicly Available AI Generated IA Data

- National Oceanic and Atmospheric Administration (NOAA) has publicly available AI generated IA Data
- Generated as part of NOAA's coastal change analysis program (C-CAP)
- Escambia County Data is from 2022
- Captures more IA than property appraiser
- Visual quality is poor
- Unable to modify or update data



Drone IA Collection

- Could be considered a subset of AI generated IA options
- Aerial imagery is obtained using drones, rather than satellite photography.
- AI and machine learning techniques are then used on the drone imagery to develop the impervious area data.

Drone IA Collection

- › Fully autonomous drones used to capture high-resolution property imagery
- › Primary use is not for stormwater fee calculations, but rather roof damage assessments
- › Combined with AI machine learning to generate property features such as rooftops



Drone IA Collection

- Horry County, SC
 - › Horry County's software sends final inspection notice to GIS Team
 - › GIS team sends out a drone to capture the impervious surface area
 - › Stormwater fees can be collected upon project completion



Image Credit: <https://www.tylertech.com/resources/case-studies/case-study-how-horry-county-sc-used-drones-to-increase-roi>

Drone IA Collection

- Pros
 - › Can be used to capture IA from new construction or other property updates more quickly than satellite imagery data derivatives
 - › Could be combined with other IA data methodologies or included as part of a data maintenance strategy.
- Cons
 - › Likely not used for coverage of the entire service area
 - › Cost is dependent on the area of coverage needed

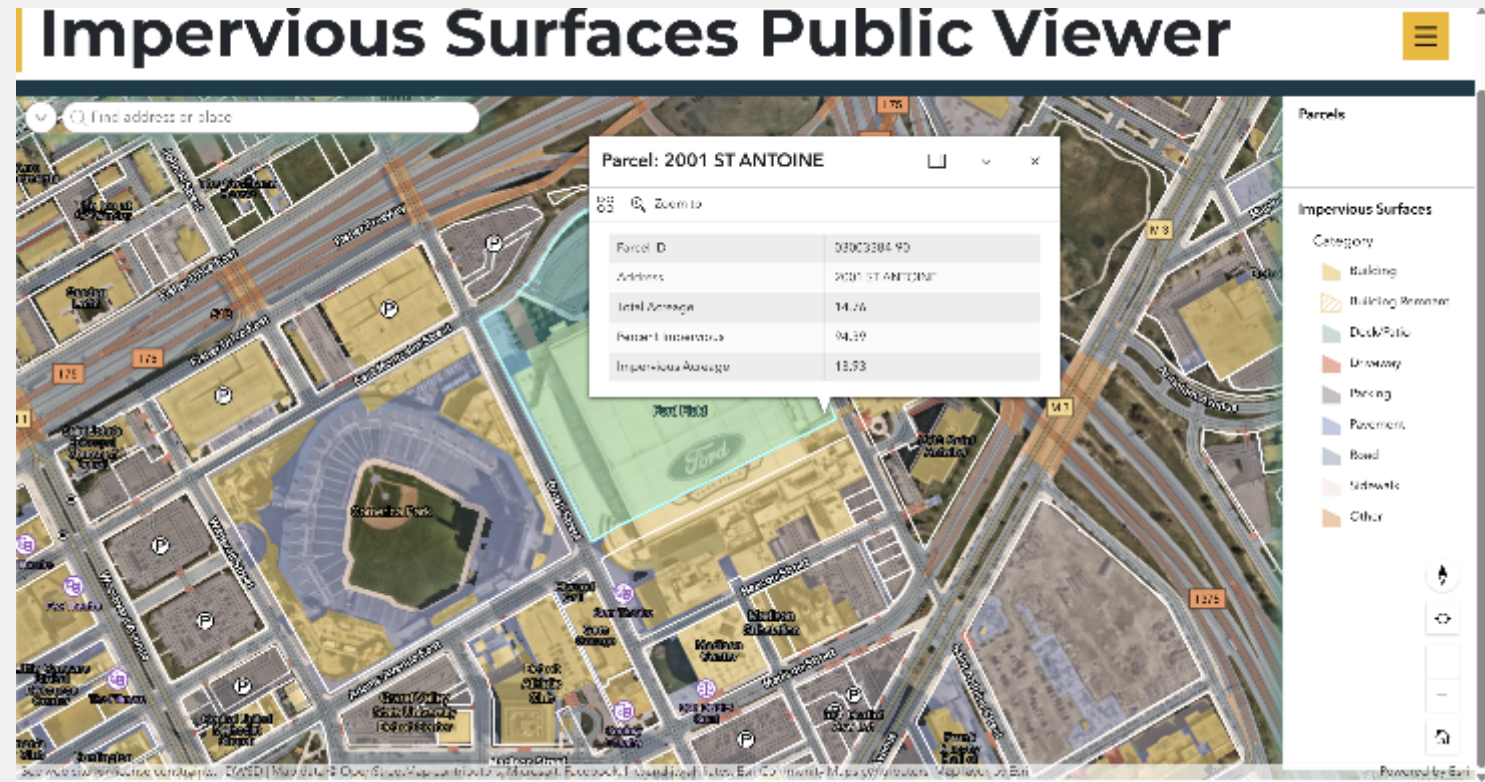
Public Facing Web Viewers

- Combined with IA data to provide the public with confidence in the accuracy of their Stormwater Fee
- Used as a customer service tool
- Example from Arlington, VA – with manual digitizing



Public Facing Web Viewers

- Combined with IA data to provide the public with confidence in the accuracy of their Stormwater Fee
- Used as a customer service tool
- Example from Detroit, MI – with AI generated IA data



Web Viewer –Estimated Cost and Staffing Considerations

- Estimated costs for Web Viewer: Approximately \$8,000 - \$9,000
- Staffing:
 - › City IT staff would be needed to set up City hosting of web viewer on City Website
 - › City IT staff and GIS staff would need to develop SOPs for updates to IA data on web viewer
 - › Decide what data to display in the web viewer
 - › Additional staff hours may be required at implementation of new data and/or rate structure
 - › Consultant could assist City staff to set up the web viewer

NEXT STEPS AND TIMELINE CONSIDERATIONS



Next Steps and Timeline Considerations

- Decide preferred methodology
- Solicitation for IA collection under preferred methodology
- Collection of IA
- Update of Ordinance
- Update total ESUs based on new IA
 - › Consider re-evaluating the rate structure, tiers, and rate based upon new IA
- Non-Ad Valorem billing deadlines
 - › TRIM notice deadline is July/August
- Public Outreach Considerations

WRAP UP SUMMARY



Wrap Up Summary

- More accurate IA data is available through other methodologies than the current methodology
- Methodology options with greater accuracy:
 - › Manual Digitizing
 - › AI Generated IA
- Development of web viewers may be considered to improve customer service and public communications about the fee
- Timeline considerations

DISCUSSION SESSION



Q&A

Thank you!

Raftelis Contacts:

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