A G E N D A

LEWISVILLE CITY COUNCIL MEETING
APRIL 23, 2018

CITY COUNCIL CONFERENCE ROOM
LEWISVILLE CITY HALL
151 WEST CHURCH STREET
LEWISVILLE, TEXAS 75057

CALLED SPECIAL SESSION – 6:00 P.M.

Call to Order and Announce a Quorum is Present.

WORKSHOP SESSION:

1. Presentation By Main & Mill Association Regarding Old Town Lewisville Branding and Marketing

2. Discussion on Sustainability Achievements and Next Steps

3. Discussion of Solid Waste, Recycling and Household Hazardous Waste Issues

CLOSED SESSION: In Accordance with Texas Government Code, Subchapter D,

1. Section 551.072 (Real Estate): Property Acquisition

2. Section 551.087 (Economic Development): Deliberation Regarding Economic Development Negotiations

ADJOURNMENT

NOTICE OF ASSISTANCE AT THE PUBLIC MEETINGS

The City will provide appropriate auxiliary aids and services, including sign language interpreters and assisted listening devices, whenever necessary to ensure effective communication with members of the public who have hearing, sight or speech impairments, unless doing so would result in a fundamental alteration of its programs or an undue financial burden. A person who requires an accommodation or auxiliary aid or service to participate in a City program, service or activity, should contact the sponsoring Department, or the Human Resource Department at 972-219-3450 or by Fax at 972-219-5005 as far in advance as possible but no later than 48 hours before the scheduled event.

AGENDA
LEWISVILLE CITY COUNCIL
CALLED SPECIAL SESSION
APRIL 23, 2018

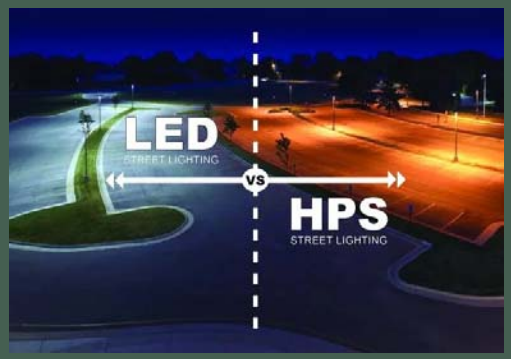
The City Council reserves the right to adjourn into closed session at any time during the course of this meeting to discuss any of the matters listed above, as authorized by Texas Government Code Section 551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices) and 551.087 (Economic Development).

SUSTAINABILITY UPDATE

April 23, 2018

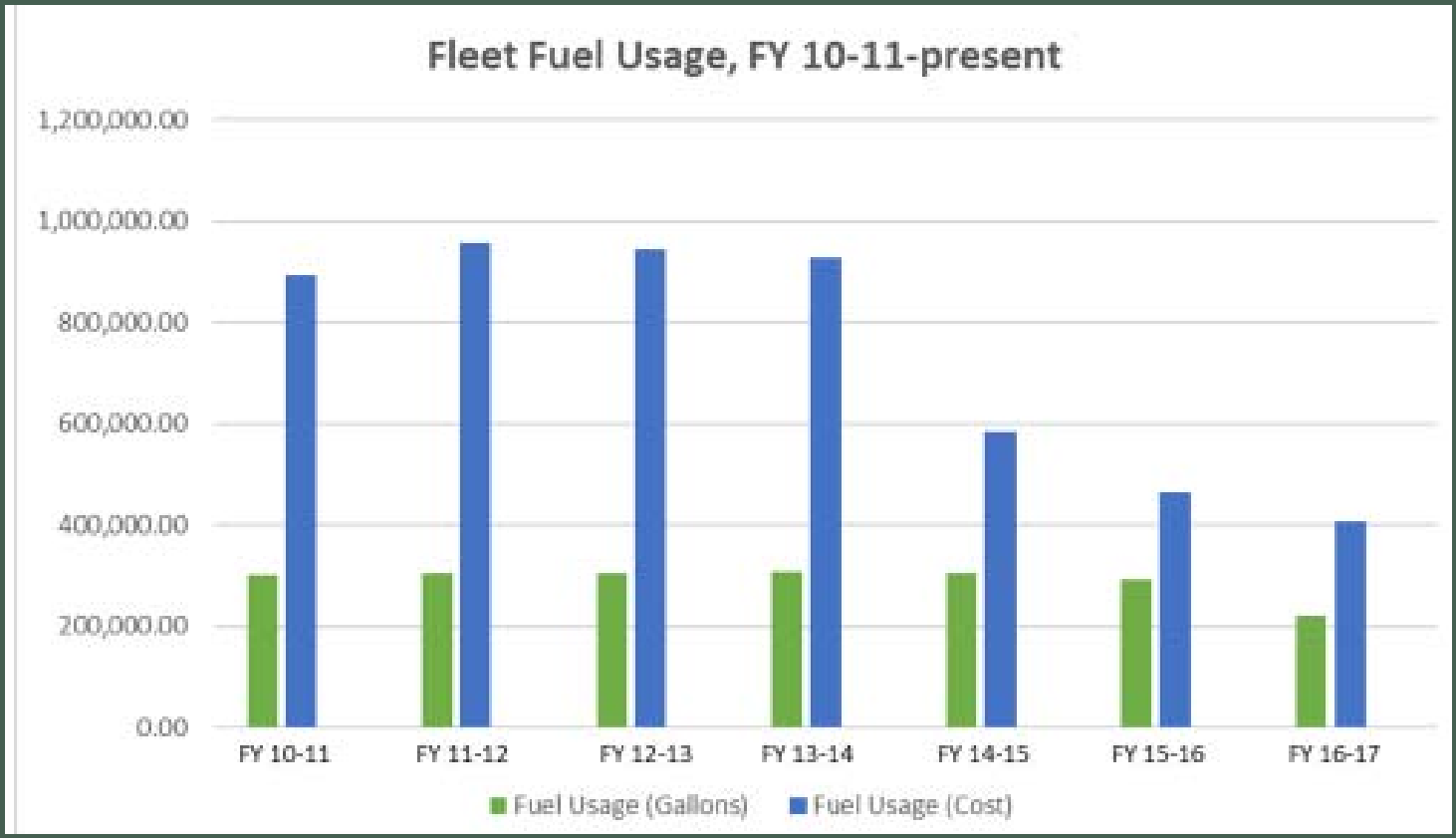
From 2025 Plan Adoption to 2016

- 2015
  - Transform Global performs resource and efficiency assessment for all city facilities.
  - Over $2.1 million in energy efficiency improvements since 2013.
    - Where did this come from?
  - Over 2 million gallons of water savings due to conservation measures since 2014.
  - Additional public outreach
- 2016
  - Added 19 green vehicles (including five all-electric Nissan Leafs) and two charging stations.
  - Additional reduction of 2.6 million kWh of energy usage, resulting in more than $211,000 in savings.
  - Became a solar ready community with the adoption of the 2015 International Residential Code (IRC)
  - Additional public outreach



2017-18 successes

- Designation as SolSmart Bronze community
- Launch of residential Water Conservation Credit program
- Formation of internal employee Green Team
- Sustainable Purchasing Directive
- Anti-Idling Directive
- Additional reduction in energy consumption in city facilities by 151,410 kWh, primarily due to light replacements and building management systems
- Addition of two additional Nissan Leafs, continued "right sizing" fleet vehicles, and installation of DC fast charging station at Fleet
- Bronze Fleet Award from North Central Texas Council of Governments (NCTCOG) for commitment to fuel efficiency


Fleet Fuel Usage, FY 10-11-present
1,200,000.00
1,000,000.00
800,000.00
600,000.00
400,000.00
200,000.00
0.00
FY 10-11
FY 11-12
FY 12-13
FY 13-14
FY 14-15
FY 15-16
FY 16-17
Fuel Usage (Gallons)
Fuel Usage (Cost)

Annual Energy Savings
(calculated from Gexa billing through October 2017)

Year	Cost	kWh	Savings from Previous Year
2014	$3,815,806.55	31,235,825	
2015	$3,694,090.85	29,285,684	$121,715.70
2016	$3,481,576.81	27,367,750	$212,514.04
2017	$2,910,828.07	23,110,595	$570,748.74
Total Savings from 2014 - 2015		1,950,141	$121,715.70
Total Savings from 2015 - 2016		1,917,934	$212,514.04
Total Savings from 2016 - 2017		4,257,155	$570,748.74

Recommended Next Steps for FY 2018-2019

- Adoption of a Sustainable Building Code
- Renewable Energy Strategy Development
- Consider adoption of PACE financing at county level or at city level, if county opts out
- Recommended use of STAR Communities as our sustainability guide
- Continued involvement of Green Team
  - Departmental waste audits
  - Internal training
  - Innovation, Recycling/Waste Reduction, Energy/Water Conservation subcommittees

Sustainable Building Code

- History of Green Building recommendations in Lewisville
  - Green Code development identified as a priority Action Step for 2025
  - Previous committee discussed various sections of the International Green Construction Code (IGCC) and met with stakeholders
- North Central Texas Council of Governments (NCTCOG) recommendations on Green Code
  - IGCC reviewed by Energy and Green Advisory Board, developed recommendations and sent to Regional Code Council Committee; did not recommend adopting in its entirety
  - Dallas is the only city in the state to adopt IGCC, but it is one of several approved green code options that could be selected to build green in the city. No one has selected the IGCC as an option to date.
- Current energy code: 2015 International Energy Conservation Code (IECC), adopted at state and local level
  - Energy is only one facet of the Green Code; also should address water efficiency, air quality, durability, etc.

Sustainable Building Code Recommendations

- <u>Residential Recommendations (for new construction)</u>
  - Green Built Texas (formerly Green Built North Texas)
  - 2015 IECC Energy Code requirements (adopted 2016)
    - The current energy code requirements are 30% more efficient than a decade ago.

Sustainable Building Code Recommendations

- <u>Commercial Recommendations</u>
  - 2015 IECC Energy Code requirements (adopted 2016)
  - EV Ready requirement for all new multifamily and hotel construction
  - Require dedicated space/enclosure for recycling dumpster
  - Energy efficient cool roof requirements

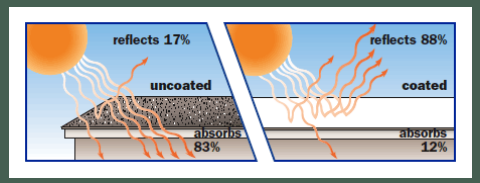
Green Built Texas

- Green Built Texas is a “specialized above-code environmental program tailored for residential housing in the north Texas region.”
- Broadens the scope of green building beyond just energy efficiency by also focusing on durability, moisture management, proper HVAC installation, water efficiency, and homeowner education
- Vetted through multiple industry stakeholders by the Dallas Builders Association
- Offer both single and multifamily residential guidelines
- Has been adopted by:
  - Dallas
  - Prosper
  - Similar versions in Houston, Austin, and San Antonio

Additional Requirements

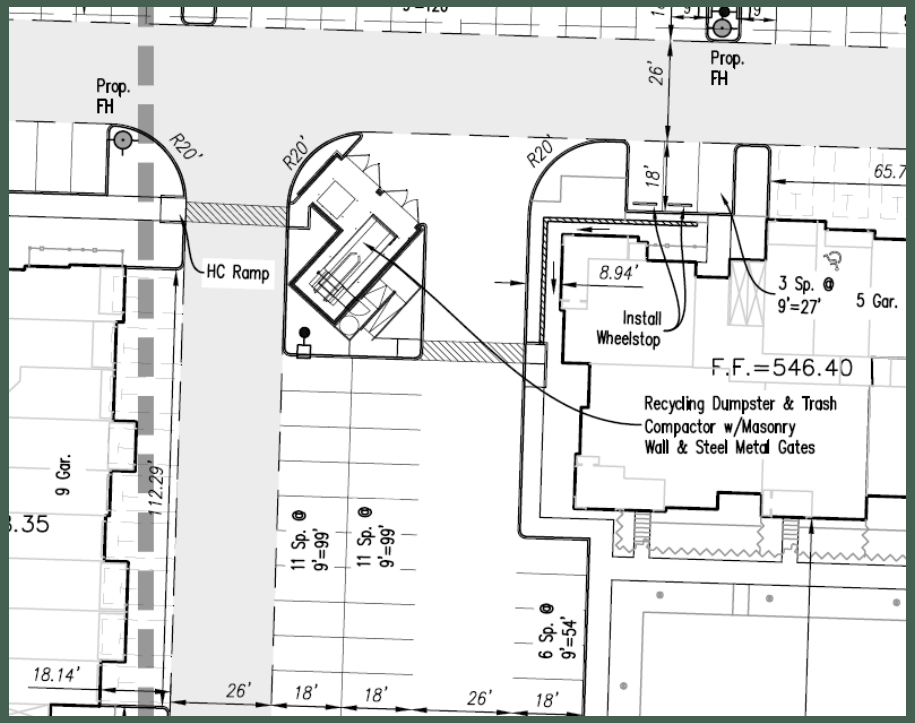
- <u>EV ready</u>
  - Underground infrastructure (conduit/raceways) laid under parking lots and available for future installation of EV charging stations
  - Minimizes cost of future installation because property avoids having to break/repair established concrete

- <u>Cool roofs</u>
  - Typically on a flat roof (commercial buildings like warehouses)
  - Designed to reflect more sunlight and absorb less heat than a standard roof, typically a lighter color. May be highly reflective paint, a sheet covering, tiles, etc.
  - Reduces energy bills by decreasing cooling needs and lowering electricity demand, reduces local air temperatures (urban heat island effect)
  - Dallas and Houston currently have ordinances



Additional Requirements (cont.)

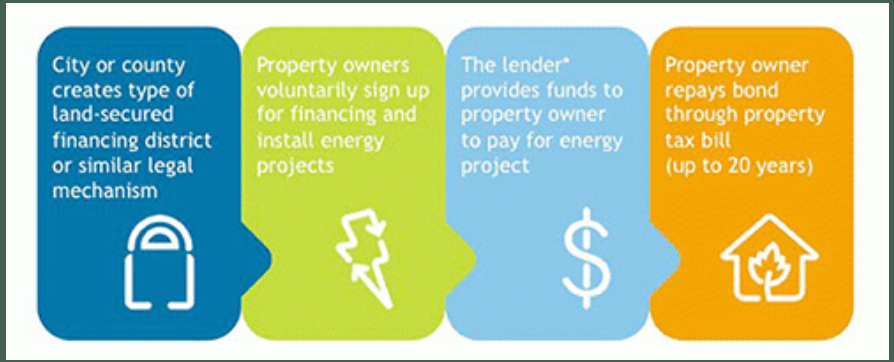
- Recycling dumpster set aside requirements
  - Commercial recycling is not mandatory at this time, but this would provide space for containers in the future



PACE

- Property Assessed Clean Energy (PACE) is a program that provides an innovative mechanism for financing energy efficiency, renewable energy, and water conservation improvements to developed properties.

- Chapter 399 of the Texas Local Government Code authorizes municipalities and counties in Texas to work with private sector lenders and commercial property owners to finance qualified improvements using property assessments.



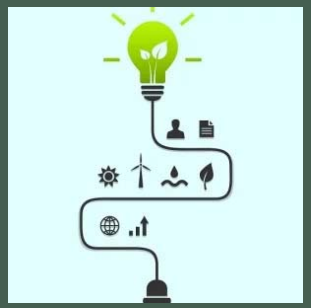
PACE

- 13 counties, 4 cities in Texas have currently adopted PACE.

- https://www.texaspaceauthority.org/service-areas/

Renewable Energy Strategy

- Info called out in 2025
- Guiding our next steps, providing data to compare options
- Researching consultants and costs currently, $19k budgeted in FY 2017-18 for this purpose
- Reviewing TCAP benefits/relationship with Resolved Energy as potential option



STAR Communities

- STAR Communities is a nonprofit organization that works to ***evaluate, improve, and certify*** sustainable communities.
- We administer the STAR Community Rating System (STAR), the ***nation's leading framework and certification program for local sustainability***. Technical experts, sustainability leaders, and local government officials developed the rating system to provide a transparent and data-driven mechanism to improve local communities. Cities and counties use STAR to measure their progress across social, economic, and environmental performance areas.
- The STAR Community Rating System was initiated and supported by founding partners ICLEI-Local Governments for Sustainability USA, the U.S. Green Building Council, National League of Cities and the Center for American Progress.

Sustainability Plan/STAR Crosswalk

Built Environment	Climate & Energy	Economy & Jobs	Education, Arts, & Community	Equity & Empowerment	Health & Safety	Natural Systems	Innovation & Process
BE-1: Ambient Noise & Light	CE-1: Climate Adaptation	EJ-1: Business Retention & Development	EAC-1: Arts & Culture	EE-1: Civic Engagement	HS-1: Active Living	NS-1: Green Infrastructure	IP-1: Best Practices & Processes
BE-2: Community Water Systems	CE-2: Greenhouse Gas Mitigation	EJ-2: Green Market Development	EAC-2: Community Cohesion	EE-2: Civil & Human Rights	HS-2: Community Health	NS-2: Biodiversity & Invasive Species	IP-2: Exemplary Performance
BE-3: Compact & Complete Communities	CE-3: Greening the Energy Supply	EJ-3: Local Economy	EAC-3: Educational Opportunity & Attainment	EE-3: Environmental Justice	HS-3: Emergency Management & Response	NS-3: Natural Resource Protection	IP-3: Local Innovation
BE-4: Housing Affordability	CE-4: Energy Efficiency	EJ-4: Quality Jobs & Living Wages	EAC-4: Historic Preservation	EE-4: Equitable Services & Access	HS-4: Food Access & Nutrition	NS-4: Outdoor Air Quality	IP-4: Good Governance
BE-5: Infill & Redevelopment	CE-5: Water Efficiency	EJ-5: Targeted Industry Development	EAC-5: Social & Cultural Diversity	EE-5: Human Services	HS-5: Health Systems	NS-5: Water in the Environment	
BE-6: Public Parkland	CE-6: Local Government GHG & Resource Footprint	EJ-6: Workforce Readiness	EAC-6: Aging in the Community	EE-6: Poverty Prevention & Alleviation	HS-6: Hazard Mitigation	NS-6: Working Lands	
BE-7: Transportation Choices	CE-7: Waste Minimization				HS-7: Safe Communities		

Questions?

Green Built Texas Multifamily Protocol Version 2.0

**In order to be recognized by Green Built Texas, each unit/building/project must be verified, under the process established by the program, to meet the following requirements.*

**Applicable building codes, as they are written or interpreted by the jurisdiction, take precedence over any provision contained herein.*

Site Planning, Management and Waste Reduction

Project Planning

1. The Green Built Texas Verifier will hold a preliminary meeting with the Project Team to address Protocol compliance demands and procedures. The Project Team will be determined by the owner's representative and consist of the regular design professionals/design team as determined by the owner. Each GBT project will have a GBT verifier as a defacto member of the integrated design team. Record of the meeting shall be kept in a manner that ensures the plans meet GBT protocol requirements.
   - The GBT Verifier shall be engaged as part of the Project Team before the project is submitted for a building permit. It is strongly recommended that the GBT Verifier be engaged at or before the time that the MEP is engaged.

2. The Project Team will incorporate the GBT process into its regular design, development, and construction review process. The GBT verifier will meet with the construction team and will conduct trade training during the framing stage of construction. Records of this meeting shall be kept by the GBT verifier.

3. The Green Built Texas Verifier will maintain and update the compliance checklist for the project. The Verifier will capture evidence of compliance for each selected measure and keep compliance records for a period of three (3) years after the completion of the project.

Site Planning, Management and Selection

1. Limit the site to a minimum density of 10 units per acre. The density calculation will be as follows: # of Units/ (SF / 43,560) = Units per Acre. Non-buildable areas and permeable surface areas set aside for permanent storm water management, parks or natural vegetation are exempt from this calculation. Master planned communities that will be built out in phases must have a site plan delineating the phase boundaries. The density calculation will apply on a per phase basis.

2. Implement an erosion control plan, developed by an authorized professional, that identifies the following:
   - Boundaries of the project site.
   - Details on best management practices (BMPs) required to protect all existing and planned storm sewer system inlets and outfalls that will require erosion control.
   - Details on best management practices (BMPs) required for protecting site boundaries subject to water runoff and location of BMPs at the construction entrance and concrete washout area to prevent erosion and storm water pollution.

3. Install and maintain erosion control measures on any area disturbed on the site until permanent vegetation has been reestablished in these areas. Projects required to obtain a TCEQ storm water permit may submit the site's Storm Water Pollution Prevention Plan (SWPPP) as evidence of compliance.

4. Provide a geotechnical / subsurface soils investigation for the site.

5. Implement a tree protection plan or fully comply with established local ordinance regarding tree protection.

6. Preserve and protect existing trees and plants adjacent to the construction site.

Waste Reduction Strategies (choose at least 3 of the following)

Strategy 1: Reuse form board on slabs and flatwork

Strategy 2: Optimize building dimensions to correspond to standard lumber dimensions.

Strategy 3: Develop detailed framing layouts to avoid waste when ordering lumber.

Strategy 4: Set aside lumber and plywood/OSB cut-offs that can be used later as fire blocking, spacers in header construction, etc.

Strategy 5: Order drywall in optimal dimensions to minimize cut-off waste. Drywall is available in different lengths, and designed dimensions should correspond to standard sizes.

Strategy 6: Set large drywall scraps aside during hanging for use as filler pieces in areas such as closets.

Strategy 7: Estimate masonry material needs carefully to avoid waste.

Strategy 8: Salvage usable bricks, blocks, slate shingles, tile and other masonry materials from remodeling and construction. Store for future jobs or divert to salvage operations.

Strategy 9: Implement on site grinding of wood waste for reuse.

Strategy 10: Implement construction waste recycling.

Water Efficiency

Alternative Compliance: Obtain EPA WaterSense® certification.

GBT Water Efficiency Requirements:

1. Locate water heater within 30 ft. of fixtures in at least 75% of project units (straight line method); install hot water on demand system; or provide high efficiency boiler with central loop.

2. Dishwasher, if installed, shall be ENERGY STAR.

3. Install rain and freeze sensors on sprinkler system and/or weather forecast based (ET) irrigation controller.

4. At least 90% of turf plantings shall be drought-tolerant varieties that can be expected to survive Stage 3 drought restrictions in the professional opinion of the landscape architect or specific varieties listed below.
    - Acceptable turf varieties include: Bermuda, Big Blue Stem, Blue Grama, Buffalograss, Deer Lindheimer Muhly, Little Blue Stem, Prairie Dropseed, Sideoats Grama, Switch Grass Muhly and Indian Grass.
    - Native and non-invasive species are acceptable to use for the selections of turf.
    - Exceptions to the turf selections in various regions of Texas where other varieties of turf and plants may be acceptable based on an appropriate native and non invasive plant list specific to that area or that soil.
5. At least 75% of shrub and tree plantings shall be those that are deemed regionally appropriate by either a horticultural authority such as the Texas A&M Horticulture Department OR in the professional opinion of the landscape architect.
    - See the Urban Landscape Guide list by region at http://aggie-horticulture.tamu.edu/earthkind/plantselector/
    - Alternative (and equivalent) landscape guides are acceptable if approved by the landscape architect.

6. Provide detailed irrigation watering plan by controller and by zone. Plan shall include total estimated annual water consumption for the total stabilized landscape. Plan should follow required jurisdictional irrigation restrictions; typical controller settings by zone; and appropriate planting (tree, turf, and shrub) type, soil type and gradient slope to mitigate runoff.

7. Install 2” deep mulch in landscape beds or xeriscape.

8. Zone irrigation system separately for turf and slab/bedding areas.

Select from the following indoor and outdoor water conservation strategies:

Indoor Water Efficiency: (Select at least three (3) of the following strategies)

- ❑ All lavatory faucets in units shall be rated at less than or equal to 1.5 gpm.
- ❑ All kitchen & utility faucets in units shall be rated at equal to or less than 2.0 gpm.
- ❑ All showerheads in units shall be rated at less than or equal to 2.0 gpm
- ❑ All toilets in units shall be water efficient equal to or less than 1.3gpf and minimum 350 gram capacity.

Outdoor Water Efficiency: Select at least four (4) of the following strategies. If less than 4 strategies are applicable then all irrigation must fall into these strategies, OR provide a 100% drip system with bubblers allowed only for tree plantings, OR install a rainwater catchment system that provides for a minimum of 50% of landscape irrigation needs.

- ❑ Drip irrigation for shrub beds or for areas within six (6) feet of pavements
- ❑ Bubblers
- ❑ Drip emitters
- ❑ Soaker hose
- ❑ Subsurface irrigation
- ❑ Sprinklers heads with 4-inch or greater pop-up height and matched precipitation rate (MPR) nozzles
- ❑ Check valves to prevent drainage from pipes
- ❑ Install a weather forecast-based Evaprotranspiration (ET) Controller
- ❑ At least 90% of shrub and tree plantings shall be those that are deemed regionally appropriate by either a horticultural authority such as the Texas A&M Horticulture Department or in the professional opinion of a landscape architect.

- See the Urban Landscape Guide list by region at http://aggie-horticulture.tamu.edu/earthkind/plantselector/
- Alternative (and equivalent) landscape guides are acceptable.

Indoor Air and Environmental Quality

Alternative Compliance: Obtain EPA Indoor AirPlus (IAP) Certification. Note: Mechanical Ventilation is not required by GBT; however, mechanical ventilation is required by the 2012 International Mechanical Code when paired with the 2012 IECC.

GBT Indoor Air Measures/Comfort:

1. Perform load calculation based on planned unit design, specifications, and orientation by the use of Manual J, ASHRAE fundamentals or other equivalent load calculation tool.
2. Confirm installation follows the project design and ensure that installed equipment matches Manual J calculations. Programs that can be used include: ACCA Manual J (8th Version or higher only), Carrier HAP Program, Trane Trace 700 or Department of Energy approved equivalent.
3. Verify proper refrigerant level and HVAC commissioning per manufacturer's specifications. Maintain documentation, including HVAC loads, equipment selections and charging (commissioning at start up).
4. HVAC contractor shall provide Verifier with completed copy of Green Built Texas Multifamily Protocol Version 2.0 Start Up Sheet (Exhibit A) or equivalent document that requires the same information.

GBT Indoor Air Measures/Air Quality:

1. Seal ducts during construction at vent entry and exit.
2. Install continuous weather and air barrier on exterior walls behind cladding material.
3. No vapor barrier on inside of exterior walls.
4. Ensure and document that flashing at windows and doors meets manufacturer criteria OR ENERGY STAR Thermal Enclosure Checklist OR weather/vapor barrier OEM directions.
5. Avoid attached garage or isolate garage from the living space by providing a tightly sealed, gasketed door between the garage and conditioned space and provide a continuous air barrier between walls and ceilings separating the garage from the conditioned living space.
6. All fuel-burning fireplaces inside the unit must provide combustion air from the outside and be enclosed with either a glass door or a fixed glass panel.
7. Use no fiberglass duct board unless sealed properly with low toxic mastic or the duct board has a mold inhibitor integrated into the product.
8. No wall-to-wall carpet in the bathroom.
9. Install vapor barrier under slab.
10. Deliver insulation to the job site in wrapped packages and store in a dry location. Remove and replace any insulation materials that get wet.
11. Install one hardwired carbon monoxide (CO) detector, compliant with NFPA Standard 720, per unit if units have attached garages or are equipped with fuel fired equipment.

Select any five (5) of the following strategies to enhance indoor air quality:

Strategy #1: Select carpet that is compliant with emission levels in accordance with the Carpet and Rug Institute's (CRI) Green Label or Green Label Plus indoor air quality program.

Strategy #2: Use zero-VOC architectural coatings as determined by EPA Method 24 (VOC content below the detection limit for the method).

Strategy #3: Use low-VOC adhesives and sealants compliant with GreenSeal GS-36.

Strategy #4: Install capillary break under bottom plate of exterior walls.

Strategy #5: Install one hardwired carbon monoxide (CO) detector, compliant with NFPA Standard 720, per unit where this is not required by the protocol.

Strategy #6: Install bath fans that are rated and field tested at the delivery of 50 CFM or greater per bathroom.

Strategy # 7: Install approved bath fan that is equipped with dedicated wall switch with a timer or dew point controller or a motion/occupancy sensor control device.

Strategy #8: Bath fan and vent must meet the requirements of ASHRAE 62.2 (2007 or later)

Strategy #9: Install kitchen and bath vanity cabinets that contain reduced levels of formaldehyde in compliance with the American National Standards Institute (ANSI) or California Air Resources Board Air Toxic Control Measure (CARB ACTM) criteria.

Strategy #10: Prohibit smoking in common areas; signage must be displayed in all common areas.

Strategy #11: Prohibit smoking in the entire project. No smoking policy must be incorporated into residential lease agreement (Equivalent to compliance with 3 strategies)

Strategy #12: Install return air ducts, jump ducts or transfer grill in all bedrooms OR pressure difference between master bedroom and adjacent interior areas (i.e. hallway) shall not exceed 6 Pascals. Testing shall be performed with all interior doors closed and all blowers operating at high speed cooling.

Strategy #13: Install kitchen range hood (at least 100 CFM) to vent range to the outside if range hood location is greater than 25 feet from the closest exterior opening OR install a kitchen exhaust fan (at least 100 cfm) that terminates at the exterior of the building for each MF dwelling unit. (Equivalent to compliance with 2 strategies).

Strategy # 14: Pre Occupancy flush: Run HVAC system and all bath fans for 48 hours post paint and prior to occupancy

Strategy # 15: Install Merv 8 or better filter

Strategy # 16: Install thermostat with a dehumidification cycle OR add a central or room dehumidifier.

Strategy #17: Provide mechanical ventilation in compliance with ASHRAE 62.1 or 62.2 (2007 or later, as applicable)

Energy Efficiency

Alternative compliance: obtain ENERGY STAR V3 or ENERGY STAR - MFHR Certificate or LEED NC or LEED H Certificate.

Energy Efficiency Measures:

Low Rise Compliance (1 to 3 stories with exceptions for 4 and 5 story buildings within the residential (R) scope of the International Energy Conservation Code): choose one (1) of the following strategies.

1. Comply with jurisdiction's energy code requirements, inclusive of duct and unit tightness testing:
    - Mechanical ventilation, continuous exterior insulation and advanced framing are required when specified by code
    - Install an outdoor thermostat on all heat pump units
    - Unit tightness is equal to or less than 5.1 ACH50 or use tradeoffs approved by the North Central Texas Council of Governments.
    - Total duct leakage is less than or equal to 6 CFM per 100 square feet of conditioned floor area
2. Obtain whole building HERS Index of 80 or below, inclusive of duct and unit tightness testing, and/or MMBTU calculation, and the EPA Thermal Enclosure Checklist with the modifications as noted below:
    - Mechanical ventilation, continuous exterior insulation and advanced framing are required when specified by code
    - Install an outdoor thermostat on all heat pump units
    - Unit tightness is equal to or less than 5.1 ACH50 or use tradeoffs approved by the North Central Texas Council of Governments.
    - Total duct leakage is less than or equal to 6 CFM per 100 square feet of conditioned floor area

Mid and High Rise Compliance (4 stories and up within the commercial (C) scope of the International Energy Conservation Code): choose one (1) of the following alternatives

1. Comply with jurisdiction's energy code requirements and complete submission of the EPA Thermal Enclosure Checklist with the modifications as noted below:
    - Mechanical ventilation, continuous exterior insulation and advanced framing are required when specified by code.
    - Building tightness testing $\leq$ 0.40 cfm/ft² at a pressure differential of 0.3 inches water gauge (2.0 L/s×m² at 75 Pa) in accordance with ASTM E 779
    - Duct testing tightness $\leq$ 6cfm/100ft² of conditioned area for ducted system
    - Install outdoor thermostat on all heat pump units

2. Compliance with and Certification of project with ENERGY STAR MFHR as it exists or is may change (Compliance can be achieved through either the prescriptive or the performance path) OR, Compliance with an ASHRAE Model that is greater than or equal to 10% better than ASHRAE 90.1 – 2007 or 5% $\geq$ ASHRAE 90.1-2010.
    - Complete submission of the EPA Thermal Enclosure Checklist with the modifications as noted below
        - Mechanical Ventilation is not required by GBT (unless required by code)
        - Thermal Bridging reduction through continuous exterior insulation is not required
        - Advanced framing not required
        - Building tightness testing $\leq$ 0.40 cfm/ft² at a pressure differential of 0.3 inches water gauge (2.0 L/s×m² at 75 Pa) in accordance with ASTM E 779
        - Duct testing tightness $\leq$ 6cfm/100ft² of conditioned area for ducted system
    - Complete submission of the EPA MFHR compliance certification
    - Install outdoor thermostat on all heat pump units

Notes:

- Use of an approved (EPA or RESNET) Sampling Protocol for project testing is acceptable.

- Sampling protocol approved by the North Central Texas Council of Government is also acceptable.
- Some acceptable specialized Air Handling equipment (notably "pancake" air handlers) may not have an AHRI rating. Acceptable manufacturers include First Company, SunTherm and others when accompanied by third party ratings that include matched equipment, documentation, engineering and performance methods that are in compliance with DOE and AHRI guidelines.

Materials

Frame Materials:

1. Use engineered lumber products to maximum extent possible, based on the project's objectives, to include trusses and other engineered products.

2. Install exterior cladding materials with minimum 10-year warranty.

3. Keep stored materials elevated above the ground.

4. Provide proper drainage around materials as well as adequate air circulation and ventilation to keep materials dry.

5. Stack and move forward all loose and usable frame material after completion of each framed building.

Advanced Framing Techniques: Choose any two (2) of the following techniques or use advanced wall systems such as SIPs or ICF:

1. Use 19.2-inch or 24-inch on-center framing.

2. Use 24-inch on-center framing for roof systems.

3. Steel framing as long as thermal bridging is mitigated by continuous insulation product..

4. Right-sized headers or R-3 insulated headers (where appropriate).

5. Eliminate headers in non-bearing walls.

6. Ladders blocking at interior-wall-to-exterior wall intersections (i.e. Ladder T's at perpendicular wall intersection) and double rim joist in lieu of header (2X6 or deeper wall framing).

7. Two-stud corner framing or California Corners.

8. Engineered frame design.

General Materials Requirements:

1. Ensure that gutter downspout extensions, concrete splashguards, or proper grading provide positive drainage away from the building or tied directly into storm sewer.

2. Install metal drip edge at eaves and gable roof edges.

<u>Termite Prevention:</u> Pre-treat the subgrade for subterranean termites with an EPA-approved chemical insecticide prior to placement of the foundations AND choose one (1) of the following termite prevention strategies

1. Install a continuous, physical, non-chemical foundation termite barrier.

2. Use termite-resistant materials for structural components and exterior claddings of walls, floors, or exterior decks.

3. Exposed slab must be at least 6-inches above the finished grade.

Innovative Options: Employ at least one (1) of the following strategies:

1. Utilize a temporary "tree farm" by relocating trees and other vegetation during construction for re-planting at a later date.

2. Provide common area recycling for tenants with "recycling only" containers.

3. Provide dedicated recycling areas in all units.

4. Use Fly Ash or Slag Cement to reduce the amount of Portland cement on a project (can be used in stucco mix as well).

5. Use Recycled materials including at least 50% recycled steel and use OSB for exterior sheathing.

6. Use paving materials with a Solar Reflectance Index of 29 or greater for at least 50% of the site hardscape.

7. Use water retention ponds for irrigation.

8. *Use bioswales to remove silt and pollution from surface runoff water.*

9. *Provide one or more electric vehicle charging stations*

10. Enter into minimum two year contract to purchase 100 percent renewable power for the house meters for the project.

11. *Horizontal or vertical building envelope projections are a minimum of 18 inches in order to minimize solar heat gain and minimize water intrusion.*

12. *Install a minimum of #30 roofing felt on pitched roof for moisture protection. Installing two layers of #15 roofing felt is an acceptable means of compliance with this provision.*

13. *Use minimum class 4 roofing material.*

14. Install radiant barrier with a minimum initial reflectance of 0.90 and maximum initial emittance of 0.10 on roof deck of all buildings OR Install Energy Star certified roof product on all buildings.

Resident and Operator Education:

1. Provide onsite staff with system maintenance and operational strategies for ongoing maintenance of project.
2. Provide residents with information on local recycling programs, green energy service providers, and Green Built Texas process.

Project Registration

1. Verifier shall register the project in the Green Built Texas Home Registry system upon or prior to completion of the project.
2. Registration fees must be paid in full before the project is to be recognized by the program. Registration fees are as follows:
    - **a.** Projects with less than 200 units: $2,000
    - **b.** Projects with 200 or more units: $2,500

SR PRODUCTS™
CUSTOMER SATISFACTION SINCE 1900

WITE BRITE METAL ROOF COATING SYSTEM

Roof Coating System

Restores performance characteristics on various types of metal roof systems while simultaneously enhancing the aesthetic qualities. A single-component, fluid-applied acrylic material that cures to a membrane with excellent durability and flexibility. Excellent for leak repairs, general maintenance and roof restoration. Full labor and material warranties are available. System is maintainable and provides a cost-effective alternative to metal roof replacements if the roof condition is suitable for restoration.

Features

- Seamless roof membrane and flashings
- Sustainable system
- Product is manufactured per ISO 9001 standard
- Wite Brite is ENERGY STAR® and Cool Roof rated
- Total Roof System Warranty
- Fully adheres to vertical and horizontal surfaces
- May be used for repairs, base flashings, pipe penetrations, edge details and curb flashings
- Mold and mildew resistant
- Available in a variety of colors
- Brush, roller or spray applied

Before

Benefits

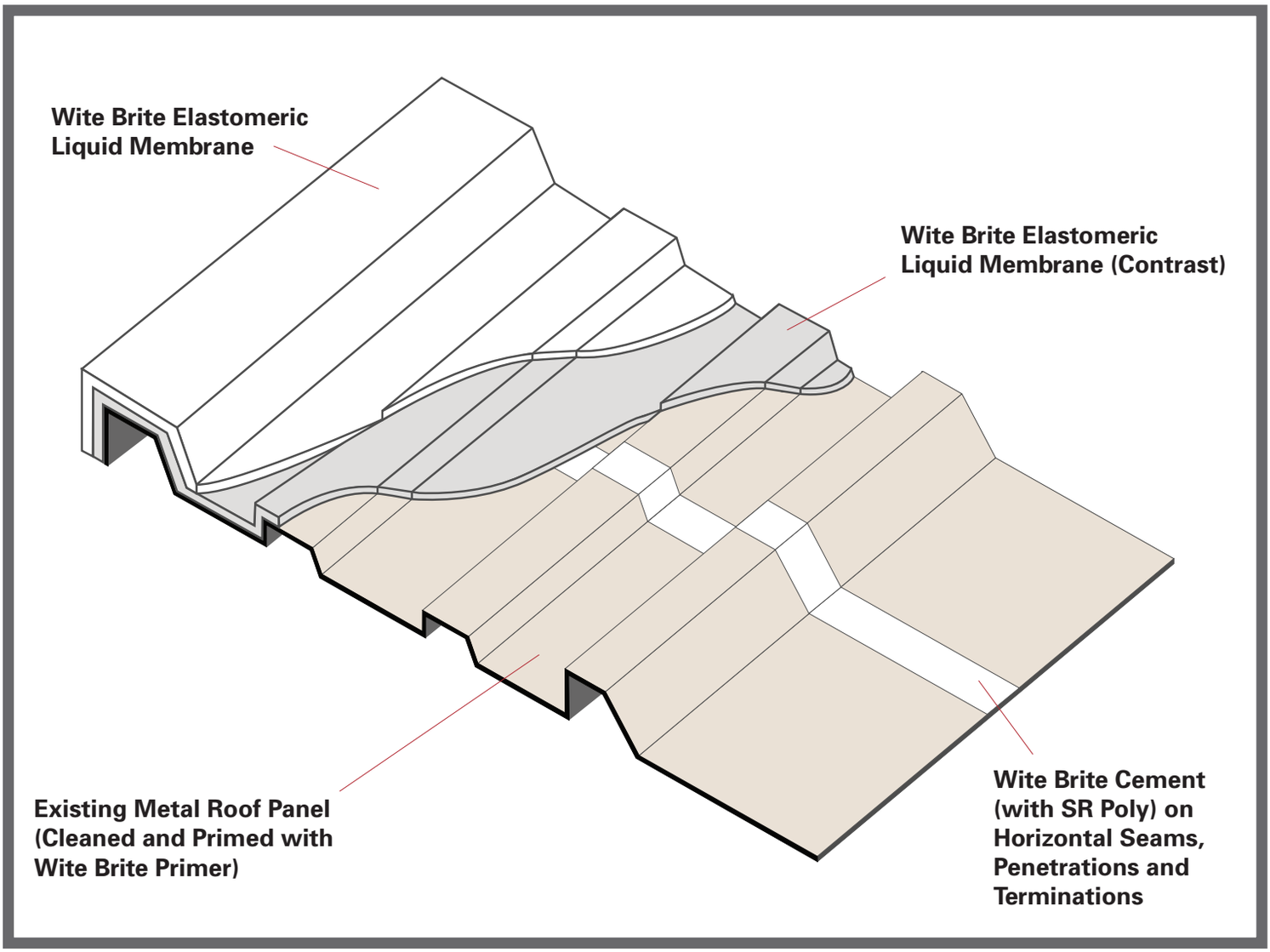
- Noninvasive and nondestructive—no fasteners or holes that can cause leaks
- Membrane is over 70 mil thick
- System can be resurfaced/renewed over time to avoid costly and disruptive replacements and reinstate full labor, materials and workmanship warranty
- No condensation between layers, which may happen with mechanically attached single ply systems
- Offers solar reflectance and energy savings during warm climate months
- Materials and workmanship warranties are available
- Less disruption to customers and employees
- Complies with existing building code approvals such as FM, UL and Dade County
- Installer-friendly system that can be applied by in-house maintenance staff
- A proven track record with installations on millions of square feet throughout the U.S. in every environment
- Perfect solution for hard-to-flash situations that exist on many metal roofs
- Compatible with Wite Brite cement and SR Poly

After

PROTECT YOUR ROOF

At Its Weakest Points

Wite Brite Metal Roof Coating System creates a strong, flexible roof membrane with exceptional tensile strength and elongation capabilities, which allows for greater temperature fluctuations and accommodates building movement. Using a simple three-step process that includes: 1) Clean and prime existing surface; 2) Apply base coat; 3) Apply top coat, the Wite Brite Metal Roof Coating System creates a leak-free, seamless and monolithic roofing system that offers years of trouble-free service and the elimination of costly repairs and replacements.



1380 East Highland Road • Macedonia, OH 44056 • 330.998.6500 • **www.simonroofingproducts.com**

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ENERGY SAVING PROJECTS AND COST

FY 13-14		
HVAC system at Annex and Children's Library	$565,382.00	
Energy Management System at Annex and Children's Library	$280,000.00	
Retrofit 400 watt metal halide with LED at Library	$15,330.00	
Retrofit Fire Station 1, 2, and 3 High Bay lighting with LED	$19,314.00	
Retrofit 250 watt Halogen lamp with LED at Grand Theater	$19,000.00	
Total	**$899,026.00**	

FY 14-15		
Retrofit Fred Herring GYM with LED	$26,900.00	
Retrofit 400 watt with LED at Fred Herring Racuetball court	$14,500.00	
Retrofit Fire Station 4, 5, and 6 High Bay lighting with LED	$16,000.00	
HVAC system At Fred Herring	$463,360.00	
Energy management Fred Herring	$150,000.00	
Window Shade for Dispatch	$14,300.00	
HVAC Tech position	$59,239.00	
Wastewater LED Retrofit	$50,574.00	
Total	**$794,873.00**	

FY 15-16		
LED lighting upgrade, Parking lot, MPRC GYM, Senior Center high ceiling, Council Chamber	$161,955.00	
Energy management system for Adult Library and City Hall	$279,966.00	
Total	**$441,921.00**	

Total cost for Energy Saving Projects	**$2,135,820.00**

Rebate and Energy cost savings

Total TNMP rebate From 2014-2016	**$28,047.00**
Total energy reduction kWh From 2014-2016 (kWh)	**3,868,075**
2014 Electricity cost	**$3,815,806.55**
2015 Electricity cost	**$3,694,090.85**
2016 Electricity Cost	**$3,481,576.81**
Total Energy cost savings 2014 - 2016	**$334,229.74**
Average Annual Electricity Cost Savings	**$111,409.91**
Return of Invenstment in Years	**19**

Future Energy Saving Projects

Energy management for Kealy complex

Energy management for PD & Jail

Window shades for MCL

City Hall roof repair with energy star product

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CATEGORY	PROTOCOL ELEMENT	WHEN VERIFIED	RESPONSIBLE PARTY	HOW VERIFIED
WATER EFFICIENCY				
Water Efficiency	Obtain EPA WaterSense Certification	At Final Inspection.	Verifier	Verifier confirms presence by visual inspection.
OR Implement the following strategies:				
Water Efficiency	Irrigation systems shall be equipped with technology that inhibits or interrupts operation of the irrigation system during periods of rainfall, sufficient moisture, and freezing (e.g., rain sensors, soil moisture sensors) or a weather-forecast based (ET) irrigation controller. WS 4.2.6.	At Final Inspection.	Verifier	Verifier confirms presence by visual inspection.
Water Efficiency	Limit landscape & turf plantings to drought-tolerant varieties (must survive stage 3 drought restrictions).	At Final Inspection.	Builder, Verifier, and/or Landscaping Professional	Presence of compliant landscaping can be attested to by builder, verifier, or landscaping professional. Consult Texas A&M Horticulture list at https://aggieturf.tamu.edu/answers4you/publications/Turf%20Selection%20SCS-2009-05lr.pdf
Water Efficiency	Install 2" deep mulch in landscape beds.	At Final Inspection.	Verifier	Verifier confirms mulch of at least 2-inches in depth.
Water Efficiency	Select water efficient toilets (1.3 gpf) that work with first flush (min. 350 grams).	At Final Inspection.	Verifier or Plumber	Verifier confirms that toilet model(s) purchased meets performance requirement, using MaP testing protocol reference sheet, or plumber attests that the toilets provided meets program requirements.

Water Efficiency	Reduce hot water usage by implementing one of the following: (NAHB 801.1.1)
	• Hot water plumbing running to kitchen and all bathrooms is 30 feet or less in length from the water heater and is sized in accordance with the code for the specified application.
	• One of the following piping system designs is implemented:
	  ○ Structured-type plumbing with demand-controlled hot water loops
	  ○ Engineered parallel piping system (i.e. manifold system) in which the hot water line distance from the water heater to the parallel plumbing system is less than 15 feet.
	  ○ Central core plumbing system with all plumbing fixture fittings (e.g. faucets and showerheads) is located such that the volume of water between the water heater and fixture fittings is a maximum of 6 cups.
	• Pipe runs exceeding 30 feet from the water heater to fixture locations are aided by one of the following:
	  ○ Tankless hot water heater installed at point of use and served only by cold water
	  ○ An on-demand hot water recirculation system is installed.
		At Pre-Drywall Inspection.	Verifier	Verifier confirms that piping is run at a distance of no more than 30 feet (Vertical plus Horizontal with Margin of error 5 feet) to fixtures **OR** presence of hot water on demand system.

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	○ Pipes are insulated to minimum of R3. Circulating hot water piping is insulated to minimum R2.			
CATEGORY	**PROTOCOL ELEMENT**	**WHEN VERIFIED**	**RESPONSIBLE PARTY**	**HOW VERIFIED**
Water Efficiency	Install an ENERGY STAR dishwasher.	At Final Inspection.	Verifier or Builder	Verifier visually confirms that model carries ENERGY STAR label OR Builder with appliance provider confirms that dishwasher carries ENERGY STAR label.
Select any two (2) of the following water conservation strategies or install rainwater catchment system to provide for a minimum of 50% of landscape irrigation needs (presence of rainwater catchment system confirmed by verifier and performance attested to by builder and/or landscaping professional):				
Water Efficiency	Strategy #1: Select high performance fixtures. Choose any two (2) of the following: • All lavatory faucet flows rates equal to or less than 1.5 gpm. • All kitchen & utility faucet flow rates equal to or less than 2.2 gpm. • All showerhead flow rates equal to or less than 2.0 gpm • Lavatory faucets operated with infrared sensors	At Final Inspection.	Verifier and Builder	Builder with plumber and/or fixture provider confirms flow rate with Verifier. Confirmation of fixture performance must be sent to Verifier at least twice annually.
Water Efficiency	Strategy #2: Zone irrigation system separately for turf and slab/bedding areas.	At Final Inspection.	Verifier, Builder, and/or Landscaping Professional	Builder or landscaping professional must clearly denote separate zoning on irrigation control box. Verifier confirms separate zoning indicated on control box.
Water Efficiency	Strategy #3: Install a low-volume, non-spray irrigation system. Choose any one (1) of the following: • Drip irrigation • Bubblers • Drip emitters • Soaker hose • Subsurface irrigation • Use no irrigation system	At Final Inspection.	Verifier, Builder, and/or Landscaping Professional	Presence of system used can be attested to by builder, verifier, or landscaping professional. Installed system must not have spray zones.
INDOOR AIR QUALITY				
Indoor Air Quality	Obtain EPA Indoor Air Plus Certification	At Final Inspection.	Verifier	Can be attested to by builder providing copy of certification to verifier.
OR Implement the following strategies:				
Indoor Air Quality	Comply with ENERGY STAR Version 3.0 HVAC Quality Installation requirements **OR** Implement all of the following (a-d):	At Final Inspection.	Verifier	HVAC Quality Installation Checklist is to be completed per EPA guidelines **OR**

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CATEGORY	PROTOCOL ELEMENT	WHEN VERIFIED	RESPONSIBLE PARTY	HOW VERIFIED
Indoor Air Quality	a. **Heating and cooling design loads shall be determined for each room according to ACCA Man J, ASHRAE Handbooks, or equivalent software.** Heating and cooling equipment shall be properly sized and selected to meet the design loads. This requirement shall be met by an ENERGY STAR HVAC QI Certificate (where available) OR verification of all the following: • Documentation of design load calculations (i.e., load calculation worksheet or software report), **AND** • System design documentation (i.e., sizing calculations and equipment performance information), **AND** • Verification that outdoor and indoor coils match in accordance with the AHRI Directory of Certified Product Performance. For more information, see www.ahridirectory.org	When completed by HVAC contractor.	Verifier and HVAC Contractor per EPA Guidelines	Load calculations can be conducted by contractor with proper credentials (Engineer, Texas A/C license, or under the supervision of a license holder). HVAC contractor attests to the sizing/commissioning being completed and will be required to maintain documentation throughout the warranty term. Upon request of verifier, homeowner, or builder the HVAC contractor must submit the *Manual J sizing calculation according to equipment manufacturer's specifications and airflow design according to calculations performed; within five (5) business days of request.*
Indoor Air Quality	b. Sealed **Duct system(s) shall be designed according to ACCA Man D, ASHRAE Handbooks, or equivalent software AND installed to be substantially airtight, properly balanced, and protected from construction debris.** This requirement shall be met by an ENERGY STAR HVAC QI Certificate (where available) **OR** verification of all the following prescriptive requirements, **OR** the Performance Test Alternative below:	At Pre-Insulation.	Verifier	Verifier confirms duct design according to ACCA Man D, ASHRAE Handbooks, or equivalent software.

	• Design verified by appropriate documentation (i.e., duct-sizing worksheet or annotated layout), **AND**
	• Duct system verified to meet the following additional requirements:
	  ○ Seams in the HVAC cabinet, plenum, and adjacent ductwork shall be sealed with mastic systems, tape that meets the applicable requirements of UL 181A or UL 181B, or gasket systems.
	  ○ Building cavities shall not be used as part of the forced air supply or return systems.
	  ○ Duct openings shall either be covered during construction or vacuumed out thoroughly prior to installing registers, grilles, and diffusers
		At Final Inspection.	Verifier	Verifier confirms presence by visual inspection.

	Performance Test Alternative: • Room-by-room airflows balanced and measured by the HVAC contractor within +/-20% of calculated room airflows to meet design loads, except for baths, closets, and pantries, AND	At Final Inspection.	HVAC Contractor	HVAC Contractor confirms room-by-room balance airflows according to ACCA 5 QI-2015 standard.
	• Duct system TOTAL leakage test no greater than 6 cfm per 100 s.f. of floor area (or 9% design fan flow), measured at 25 Pa, with duct boots and air handler in place, according to ASTM E1554, ASHRAE 152, or other RESNET-approved method.	At Pre-drywall Inspection	HERS Rater	HERS Rater confirms duct system TOTAL leakage requirements through duct testing outline in ASTM E1554, ASHRAE 152, or other RESNET-approved method.
CATEGORY	PROTOCOL ELEMENT	WHEN VERIFIED	RESPONSIBLE PARTY	HOW VERIFIED

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	c. **Provide mechanical whole-house ventilation meeting all ASHRAE 62.2 requirements.** The following requirements shall be visually verified: • Whole house mechanical ventilation system & controls shall be installed to deliver the prescribed outdoor air ventilation rate (ASHRAE 62.2 section 4), including ventilation restrictions in ASHRAE 62.2 section 4.5 (e.g., not greater than 6.0 cfm/100 s.f. in "Warm-Humid" climates as defined by IECC Figure 301.1); **AND** • Transfer air (i.e., air from adjacent dwelling units or other spaces such as garages, crawlspaces, or attics) shall not be used to meet ventilation requirements (ASHRAE 62.2 section 6.1); **AND** • Outdoor air inlets shall be located a minimum of 10 ft. from contaminant sources (ASHRAE 62.2 section 6.8); **AND** • Airflow shall be tested to meet rated fan airflow (at 0.25 in. w.c.) **OR** verify duct(s) sized according to the requirements of ASHRAE 62.2 Table 7.1 and the manufacturer's design criteria (ASHRAE 62.2 section 7.3)	At Pre-drywall Inspection At Pre-drywall Inspection At Pre-drywall Inspection At Final Inspection	Verifier	Verifier confirms presence by visual inspection.
	d. **Room pressure differentials shall be minimized by installing transfer grilles or jump ducts for any closed room that does not have a dedicated return, except for baths, kitchens, closets, pantries, and laundry rooms.** The opening size shall be 1 square in. capacity (grille area) per cfm of supply (including free area undercut below door as part of the area). **Performance Test Alternative:** Measured pressure differential no greater than 3 Pa (0.012 in. w.c.) between closed rooms and adjacent spaces that have a return. Pressure difference of 5 Pa shall be acceptable for rooms with designed airflow of greater than or equal to 150 cfm. **Note:** Outdoor air ducts connected to the return side of an air handler shall be permitted as supply ventilation only if the manufacturers' requirements for return air temperature are met (e.g., most manufacturers recommend a minimum of 60 degrees F air flow across furnace heat exchangers)	At Pre-drywall Inspection.	Verifier	Verifier confirms presence by visual inspection.
Indoor Air Quality	If gas furnaces and/or water heaters are located within conditioned space they must be sealed combustion or vented to the outside	At Pre-Drywall Inspection.	Verifier	Verifier confirms that gas furnaces and/or water heaters located within thermal envelope are sealed combustion or vented to outside.

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CATEGORY	PROTOCOL ELEMENT	WHEN VERIFIED	RESPONSIBLE PARTY	HOW VERIFIED
Indoor Air Quality	**No air-handling equipment or ductwork shall be located in garages.** **Note:** Ducts and equipment may be located in framing spaces or building cavities adjacent to garage walls or ceilings if they are separated from the garage space with a continuous air barrier (see ENERGY STAR Thermal Enclosure Rater Checklist).	At Pre-Drywall Inspection.	Verifier	Verifier confirms that NO air-handling equipment or ductwork is located in garages by visual inspection.
Indoor Air Quality	Provide local mechanical exhaust ventilation to the outdoors in each bathroom and kitchen, meeting ASHRAE 62.2 section 5 requirements	At Final Inspection	Verifier	Verifier confirms presence of mechanical exhaust ventilation to the outdoors in each bathroom and kitchen compliant to ASHRAE 62.2 section 5 requirements.
Indoor Air Quality	Avoid attached garage or isolate garage from the living space by providing a tightly sealed, gasketed door between the garage and conditioned space and provide a continuous air barrier between walls and ceilings separating the garage from the conditioned living space.	Initially at Pre-Drywall and confirmed at Final Inspection	Verifier	Verifier checks for poly seal at base plate during Pre-Drywall Inspection and confirms sheetrock, tape, bed, and other sealing techniques at Final Inspection.
Indoor Air Quality	Install equipment to maintain Relative Humidity at or below 60% using one of the following: a. Additional dehumidification system(s) b. Central HVAC system equipped with additional controls to operate in dehumidification mode	At Pre-Drywall Inspection.	Verifier or HVAC Contractor	Verifier or HVAC contractor must attest to installation of equipment designed to meet this performance guideline in writing.
Indoor Air Quality	Fireplaces. New wood –burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air. Where using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace. Where using tight-fitting doors on masonry fireplaces, the doors shall be listed and labeled in accordance with UL 907.	Initially at Pre-Drywall and confirmed at Final Inspection	Verifier	Verifier confirms that combustion air for wood-burning fireplace will come from the outside. Verifier confirms presence of glass door on fireplace.
Indoor Air Quality	Use water-based mastic to seal ducts.	At Pre-Drywall Inspection.	Verifier	Verifier confirms presence by visual inspection.
Indoor Air Quality	Use minimum MERV 8 filters for AC return. There should be no visible bypass between the filter and the filter rack.	At Final Inspection.	Verifier	Verifier confirms filter rating of at least MERV 8.
Indoor Air Quality	**All homes equipped with combustion appliance(s) or an attached garage shall have a carbon monoxide (CO) alarm installed in a central location in the immediate vicinity of each separate sleeping zone (e.g., in a hallway adjacent to bedrooms.)** The alarm(s) shall be hard-wired with a battery back-up function and placed according to NFPA 720. The alarms shall be certified by either CSA 6.19-01 or UL 2034.	At Final Inspection.	Verifier or HVAC Contractor	Verifier confirms presence of CO detector and compliance with NFPA 5.2.3 is confirmed by manufacturer statement/specifications/label.

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CATEGORY	PROTOCOL ELEMENT	WHEN VERIFIED	RESPONSIBLE PARTY	HOW VERIFIED
Select any two (2) of the following strategies to enhance indoor air quality:				
Indoor Air Quality	Strategy #1: Select carpets, paddings, and adhesives that are compliant with emission levels in accordance with the Carpet and Rug Institute's (CRI) Green Label or Green Label Plus indoor air quality program.	At Final Inspection.	Builder or Verifier	Presence can be attested to by providing verifier copy of manufacturer statement/specifications and purchase order **OR** Verifier confirms that at least 80% of all carpet, pad, and floor covering adhesives are Green Label.
Indoor Air Quality	Strategy #2: **Interior paints and finishes, including 90% or more of such products applied to interior surfaces of homes, shall be certified low-VOC or no-VOC by one of the following:** • Green Seal Standard GS-11, **OR** • Greenguard Certification for Paints and Coatings, **OR** • Scientific Certification Systems (SCS) Standard EC-10.2-2007, Indoor Advantage Gold, **OR** • Master Painters Institute (MPI) Green Performance Standards GPS-1 or GPS-2, **OR** • A third-party low-emitting product list based on CA Section 01350, e.g., the CHPS List at www.chps.net/dev/Drupal/node/381	At Final Inspection	Builder	Presence can be attested to by providing verifier copy of manufacturer statement/specifications and purchase order.
Indoor Air Quality	Strategy #3: Install central vacuum (canister unit) outside conditioned space.	At Final Inspection.	Verifier	Confirmed via visual inspection by verifier.
Indoor Air Quality	Strategy #4: Structural plywood and OSB shall be certified compliant with PS1 or PS2, as appropriate, and shall be made with moisture-resistant adhesives as indicated by "Exposure 1" or "Exterior" on the American Plywood Association (APA) trademark. Hardwood plywood shall be certified compliant with the formaldehyde emissions requirements of ANSI/HPVA HP-1-2004 and U.S. HUD Title 24, Part 3280, **OR** certified compliant with CA Title 17.	At Final Inspection	Builder	Presence can be attested to by providing verifier copy of manufacturer statement/specifications and purchase order.
Indoor Air Quality	Strategy #5: Particleboard and MDF shall be certified compliant with the formaldehyde emissions requirements of ANSI A208.1 and A208.2, respectively, and U.S. HUD Title 24, Part 3280, **OR** certified compliant with EPPS CPA 3-08 by the CPA Grademark certification program, **OR** certified compliant with CA Title 17.	At Final Inspection	Builder	Presence can be attested to by providing verifier copy of manufacturer statement/specifications and purchase order.
Indoor Air Quality	Strategy #6: Cabinetry contains no added urea formaldehyde and is made with component materials that are certified to comply with all the appropriate standards listed in Strategies 5 or 6 **OR** shall be registered brands or produced in registered plants certified under KCMA's Environmental Stewardship Certification Program (ESP 01-06).	A Final Inspection.	Builder or Verifier	Presence can be attested to by providing verifier copy of manufacturer statement/specifications and purchase order.

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CATEGORY	PROTOCOL ELEMENT	WHEN VERIFIED	RESPONSIBLE PARTY	HOW VERIFIED
Indoor Air Quality	Strategy #7: Upgrade AC return filtration to minimum 4-inch pleated or MERV 9 or greater (in lieu of item #9). There should be no visible bypass between the filter and the filter rack. Ensure that filter is compatible with and accounted for in HVAC design calculations.	At Final Inspection.	Verifier	Verifier confirms filter is 4-inch pleated and/or carries a rating of at least MERV 9.
ENERGY EFFICIENCY (CHOOSE ONE OF THE FOLLOWING STRATEGIES)				
Energy Efficiency	Strategy #1: Achieve HERS Index of 65 or below and comply with ENERGY STAR Version 3.0 Thermal Enclosure System Checklist.	Per EPA Guidelines and RemRate software	HERS Rater	HERS Rater (can be the same entity as verifier) attests that home meets required HERS Index. (as proven by RemRate software). New state energy code requires ERI (HERS) 65.
Energy Efficiency	Strategy #2: Obtain ENERGY STAR Version 3.0 certification.	Per EPA Guidelines.	HERS Rater	HERS Rater (can be the same entity as verifier) attests that home meets performance guidelines set forth by ENERGY STAR after following EPA guidelines as they stand or may be amended.
Energy Efficiency	Strategy #3: Meet or exceed Texas Building Energy Performance Standards. NCTCOG approved Air Change Per Hour Tradeoffs are acceptable per guidance document issued to code officials, raters and builders.	Per code requirements or NCTCOG-issued guidance document	HERS Rater	HERS Rater (can be the same entity as verifier) attests that home meets performance guidelines and issues compliance certificate per code requirements or follows NCTCOG approved tradeoffs.
DURABILITY AND MOISTURE MANAGEMENT				
Durability and Moisture Management	Comply with Energy Star Version 3.0 Water Management System Checklist	At Final Inspection.	Builder or Verifier	Builder or Verifier confirms presence by visual inspection.
HOMEOWNER EDUCATION				
Homeowner Education	Provide homeowner with operations and maintenance kit and perform walk-through.	Builder Conducts Walk-Through.	Builder	Builder must provide a walkthrough of the home to familiarize the homeowner with the operation and maintenance of mechanical systems.
Homeowner Education	Provide homeowner with information on local recycling programs, green energy service providers, and Green Built Texas registration process.	Builder Presents Registered Home Certificate.	Builder	Builder presents homeowner with Green Built Texas certificate.

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Solid Waste, Recycling, and Household Hazardous Waste Update

Special City Council Work Session

April 23, 2018

Decision Points / Council Direction

- Future of Recycling Processing and Materials Accepted in the Program
- Commercial Recycling
- Challenges of Multi-family Recycling and Possible Changes to the Program
- Future of the Household Hazardous Waste Program and its Current Location

Background

- Solid Waste and Recycling
  - Until 1978 trash collected by small local companies
  - Population growth increased the demands of trash service
  - 1979 Waste Management service contract began
  - 2014 current solid waste contract started, switched to one pickup per week
  - Waste Management hauls residential and multi-family recycling to third party processor

- Household Hazardous Waste Program
  - Grant funded mobile collection unit, UTRWD owned but member cities contracted
  - 1999 Four, one-day collection events per year, 381 participants
  - 2005 Participation had doubled, Started to collect e-waste
  - 2007 Residential Convenience Center opened, 1,001 participants

Solid Waste & Recycling

Current Residential Service Rates

(Agreement expires in 2024)

Service	Container	Rate Per Month
Once a week trash collection; two 39-gallon containers in addition to WM cart	WM 96-gallon cart	12.06
Once a week recycling collection; nothing allowed outside cart	WM 96-gallon cart	Included
Once a week Bulky Waste collection	Resident container/bundled or large item set-out; maximum 3 CY	Included
Once a week Yard Waste collection	Resident bundle, residential container set out; maximum 3 CY	Included
Senior citizen, same service as above	Same set-out containers; can request smaller cart but will pay same rate	9.65
Special carry-out trash/recycling service (does not include Bulky Waste and Yard Waste)	Same set-out containers; can request smaller cart but will pay same rate	12.06
Second trash or recycling cart	WM 96-gallon cart	5.26
Replacement of damaged cart	WM 96-gallon cart	Free
Replacement of missing/stolen cart (1-time charge)	WM 96-gallon cart	68.42

Franchise Service Residential Enhancement Options

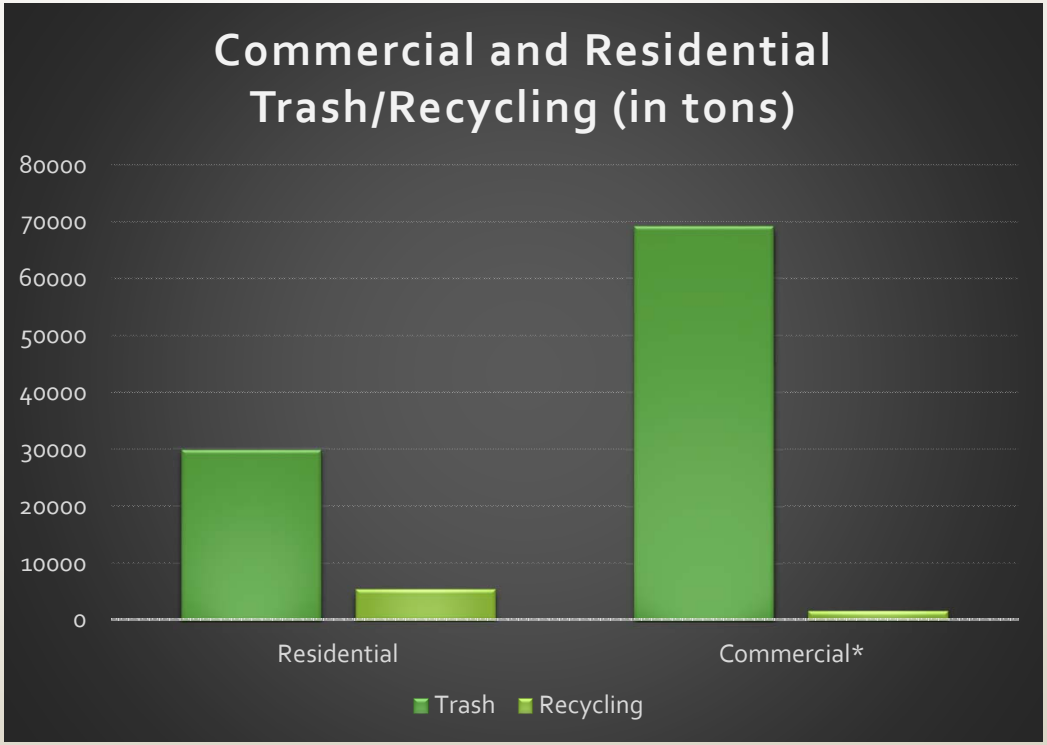
Enhancement	ONCE PER WEEK TRASH WITH SERVICE ENHANCEMENTS
	Current Service 1 x Week (T/R) WM Carts (T) & WM Cart (R)
	Current Rate **$12.06**
Yard Waste ($2.69)	$14.75
Unlimited Bulky ($2.16)	$14.22
At Your Door HHW ($1.26)	$13.32
Recyclebank ($0.69)	$12.75
Total With All Enhancements	$18.86
*** Pricing Expires July 31, 2019 for the WM Enhancement options**	

Neighbor City Comparison

City	Residential Cart Service	Trash Pick Up Frequency	Service Provider	Bulk and Yard Waste
Lewisville	**$12.06**	**1x a week**	**Waste Management**	**Bulk and Yard 1x per week**
Denton	$16.10	1x a week	City of Denton	Yard 1x per week Bulk on call
Carrollton	$20.40	1x a week	Waste Management	Bulk and Yard 1x per week
Flower Mound	$13.07	1x a week	Republic Services	Bulk and Yard 1x per week
Coppell	$16.19	2x a week	Republic Services	Bulk and Yard 2x per week
Plano	$16.10	1x a week	City of Plano/NTMWD	Bulk 1x per month Yard 1x per week
Castle Hills	$16.34	2x a week	CWD	Bulk and Yard 1x per week

Amount Landfilled vs. Recycled in 2017

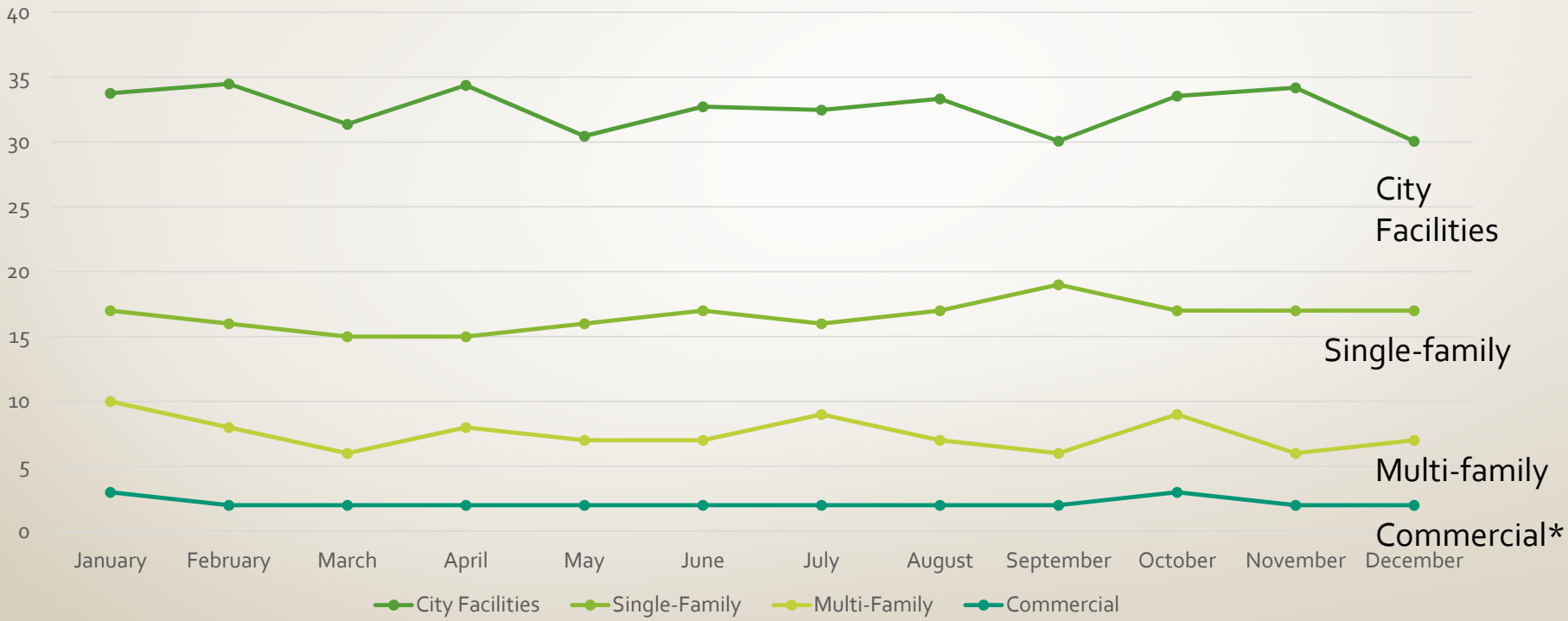
- 98,950 tons Landfilled
- 6,949 tons Recycled
- 6.56% average diversion
  - 15% Residential
  - 7% Multi-family
  - 2% Commercial
    - Open Market
    - Only includes those commercial entities partnered with WM



Commercial Recycling Survey

City	Commercial Recycling Enclosure Ordinance	Multi-family Recycling Ordinance
Lewisville	No	Yes
Denton	Yes	Under review
Carrollton	No	No
Flower Mound	No, but their citizen group led committee is considering	No
Coppell	Yes, but only for multi-family	No
Plano	No	No, but encouraged
Frisco	Yes	No
Dallas	No	Under Review

Diversion Rates by Sector (2017)



Current State of Recycling

- Value of Materials is currently low
  - Tighter Restrictions through legislation like the Chinese Sword which banned certain types of plastics, paper, and textiles
  - Dirty and contaminated commodities
  - Processing costs are higher
  - American Tariffs
- U.S. municipal recycling programs
  - Cost to Recycle instead of Revenue
  - "Wishful" Recycling
- Current contract will end with current vendor in Nov. 2018

Current Recyclable Processing Contract

- Current Contract with Pratt Industries was implemented November 1, 2015. It expires October 31, 2018.
- Materials are hauled by WM and delivered to the Materials Recovery Facility in Denton.
- Materials Accepted - Cardboard, Mixed Paper, Plastics #1-7, Waxy Cartons, Aluminum, Steel, *Glass, *Rigid Plastics, *Metal Pots & Pans
- Materials Not Accepted – Plastic Bags, Food, Styrofoam
- Revenue Sharing and no Cost to the City for the Service

* Items with little or no value to recycling process

Material Processing

Please click on the link below for brief video on how a Materials Recovery Facility (MRF) operates.

https://www.youtube.com/watch?v=zmMAIYMfw9k&t=3s

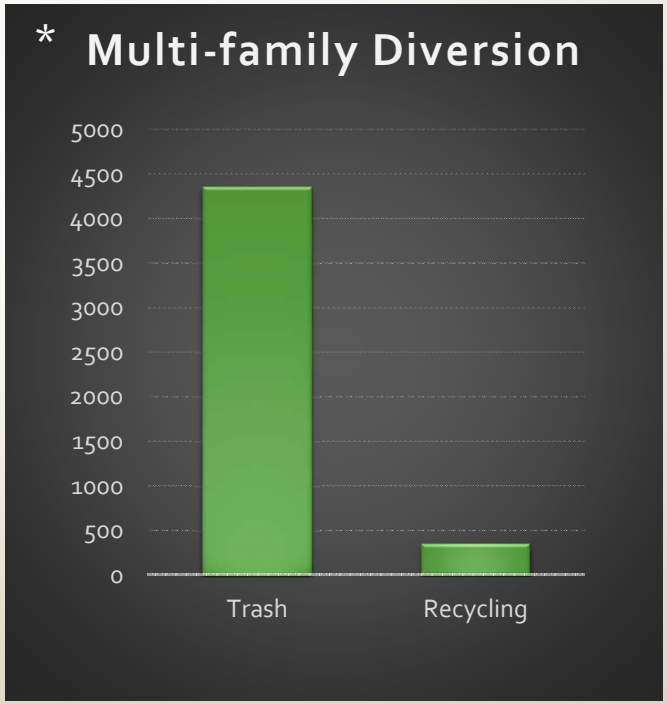
Decision Points / Council Direction

- Request for proposal (RFP) for recyclable processing may incorporate changes to stabilize costs/revenue.
- Consider voluntary/mandatory registration program (at no cost) for commercial recycling.
  - Permitting of commercial recyclers within the City in order to better track recycling data.
  - Consider setting waste diversion goals for commercial businesses.
  - Consider commercial recycling dumpster enclosures for new development.

Multi-family Recycling

Current Multi-family Recycling Program

- Mandatory for the 77 multi-family properties in Lewisville
- Program implemented in 2015
- All apartments must provide access to recycling.
- Requires Continuing Education
  - Quarterly visits
  - Recycling audits and guidance
  - Manager and tenant engagement



* Represents 7% diversion rate

Challenges

- Currently, contamination rates are high (31%), will likely go higher if we implement restrictions on acceptable materials.
- City could see a loss of revenue sharing and a cost to maintain the program.
- High turnover Rate of Apartment Tenants and Managers
- Hard to identify non-compliant tenants
- Contamination Enforcement

Multi Family Decision Points / Council Direction

- Implement penalties for non-compliance and a program to identify complexes with high contamination.
  - City may fine and/or develop other strategies to gain better compliance
- Changing the type of recycling dumpsters to reduce contamination
- Success looks like: >20% diversion, <10% contamination (we're at 7% and 31%)
- Consider dropping mandatory recycling:
  - Would allow concentration of educational outreach on complexes that are more compliant
  - Penalize complexes that are non-compliant by making them pay the full cost of waste disposal

Household Hazardous Waste Collection

HHW Recycling/Disposal Overview

- Facility for disposal of items not generally allowed for residential trash pickup
- Monthly Event on the 2nd Saturday
- 2,087 participants in 2017
- 74 volunteers (296 volunteer hours)
- On-site sorting of materials:
  - 91,811 lbs. disposed
  - 97,930 lbs. recycled (51% diversion)
- Annual Budgeted Cost $108,000*

*not including facility maintenance

Acceptable Household Hazardous and Electronic Wastes

- Aerosol cans
- Paints/Stains
- Varnishes
- All Batteries*
- Cooking Oil*
- Degreasers
- Drain Cleaners
- Solvents
- Acids/Bases
- Pesticides
- Herbicides
- Fertilizers
- Hobby Chemicals
- Pool Chemicals
- Brake Fluid
- Photo Chemicals
- Craft Chemicals
- Motor Oil & Filters*
- Transmission Fluid
- Gasoline
- Antifreeze*
- Fluorescent Lights*
- Televisions*
- Computers*
- Cell Phones*
- Small Household Appliances*

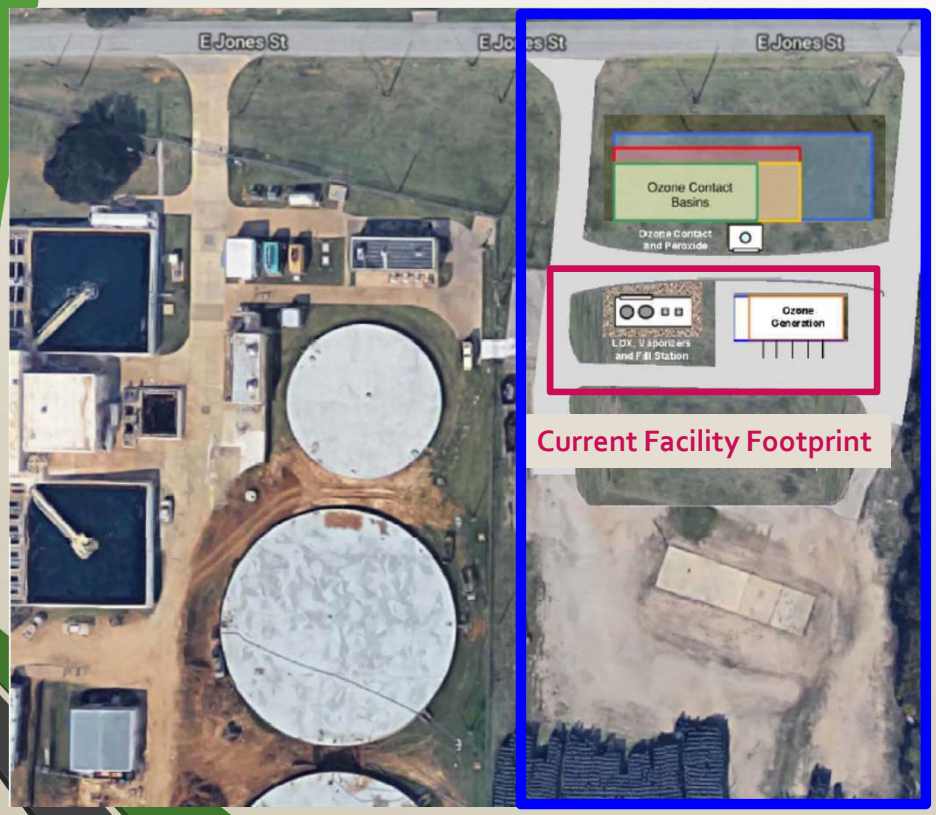
* Items that are recycled

Challenges

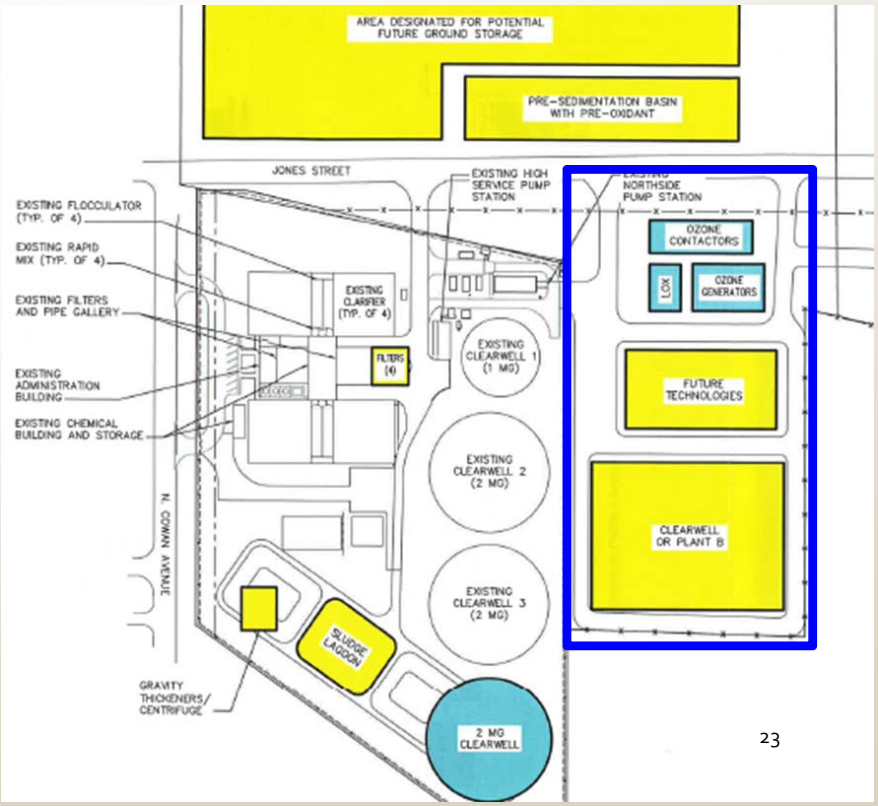
- Rising costs of disposal
  - Paint – highest volume item
  - Electronics – 2nd highest volume
- Traffic congestion on the day of the event
  - Aging facility and costs of maintenance
  - Future water plant expansion

Future Water Plant Expansion

Water Plant Ozone Implementation



Future Water Plant Expansion in long term plant expansion plans



Alternative to Monthly Events

- Waste Management offers the "At Your Door" service
  - Timeline to opt in at current rate set in franchise agreement
  - Similar to what we accept at monthly events
  - 85% of materials recycled
  - Cost to residents $1.26 per month single family, $300,000 per year compared to $108,000 currently budgeted for the program

Neighbor City Comparison

CITY	Residential Cart Service	Hazardous Household Waste Services	Service Provider
Lewisville	**$12.06**	**Monthly Event**	**Waste Management**
Denton	$16.10	At Your Door	City of Denton
Carrollton	$20.40	At Your Door	Waste Management
Flower Mound	$13.07	At Your Door	Republic Services
Coppell	$16.19	At Your Door	Republic Services
Plano	$16.10	At Your Door	City of Plano
Castle Hills	$16.34	At Your Door	CWD

How Waste Management "At Your Door" Service Works

- Call, Email or Visit WM Website to request a collection date.
  - Indicates to WM what materials resident has for disposal
- WM mails you a packet that includes instructions to prepare the materials for collection.
- On the scheduled collection date, materials should be properly packed and labeled according to instructions and place them on ground level where they are visible from the street by 7am.
- WM staff collects the materials and indicates to residents if any were not packed properly.
- Resident fills out survey card and mails after pick-up to evaluate the service

COMPARISON OF HHW PROGRAMS

	CITY HHW	WM AT YOUR DOOR
Frequency	Once a month	Unlimited (Takes two weeks to call for service, receive container, and then scheduled to get pickup)
Products Accepted	Similar (Chemicals, paint, electronics)	Similar (Chemicals, paint, electronics)
Products Excluded	Sharps	Small Appliances
Monthly Program Cost per Household	$0.47 Not including facility maintenance	$1.26
Annual Cost to Resident	$5.64	$15.12
Estimated Cost of a New Facility	$2 Million Not including land acquisition	NA
Annual Budget/Collection Revenue	108,000	$332,640

	CITY HHW	AT YOUR DOOR
Advantages	No direct charge to residents Community Volunteer involvement Revenue on some products	On call, as needed Budget savings for City and decrease in liability Generator incurs cost Promotes increased personal responsibility More accessible to community Higher rate of recycling materials collected
Disadvantages	No cost recovery from users Increasing Cost of Disposal Limited hours of operation Staff availability Current site master planned for water plant expansion	Waiting period to receive packaging container(s) Materials left in unsecured location until pickup Rate applied to all HH accounts, not just users

Decision Points

- Contract for Household Hazardous Waste Disposal
  - Waste Management "At Your Door"
- Continue to Operate City Household Hazardous Waste Facility
  - Paint Bulking Grant to consolidate materials, possible reuse opportunities, and to reduce disposal costs.
  - Impose a limit on paint per event or per address
  - Implement a charge to accept televisions at monthly events
  - Future location and relocation costs
  - Consider adding second monthly event

QUESTIONS?