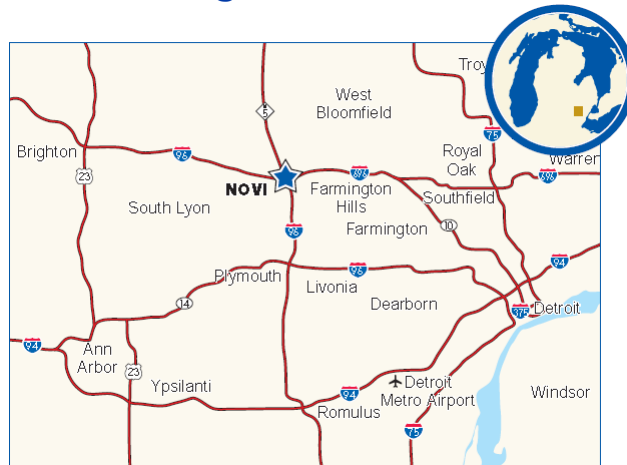


Organically Growing an Asset Management System in the City of Novi, Michigan

IMAGIN Conference 2015
Traverse City, Michigan



City of Novi, Michigan - Location

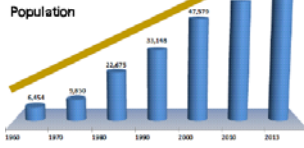


2

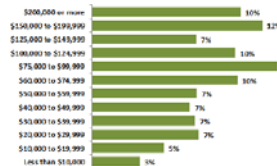


City of Novi, Michigan – Vital Statistics

The City of Novi has steadily gained population over the past 50 years, with a 2013 estimated population of nearly 60,000 (SEMCOG). This 7.3% increase is the 2nd largest population increase since 2010 in southeast Michigan, reinforcing Novi's position as one of the desirable communities to live in metro Detroit.



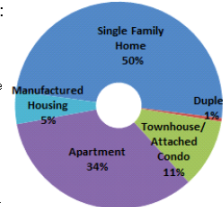
As result of the higher than average educational attainment, thereby resulting in a large percentage of management and professional jobs, it's no surprise that Novi residents incomes are also surpass county and state averages. In 2010, the median household income in Novi was \$ 80,151.



Median Household Value: \$259,656, however recent listings in Novi on realtor.com average over \$300,000.

Housing Type:

Half of the housing units in the City are detached single family homes, with apartments making up another third.



LAND USE

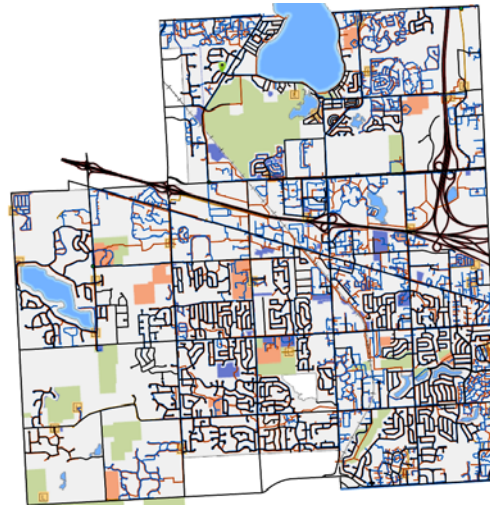


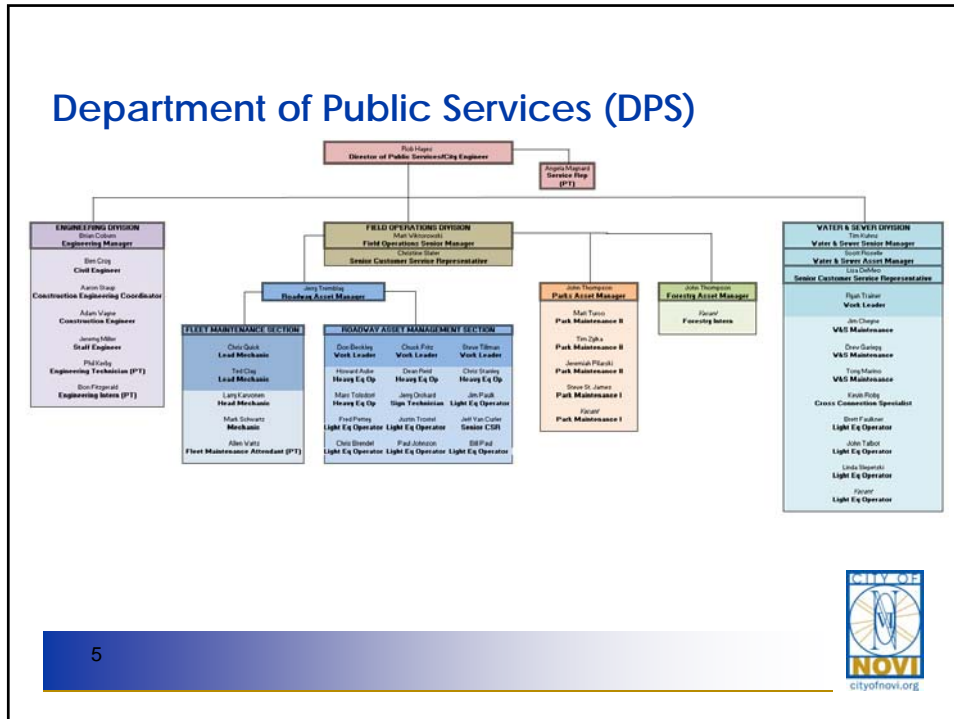
Land Use Category	Acres	Percent
Agricultural	19	0.1
Single-family residential	8,607	42.9
Multiple-family residential	749	3.7
Commercial	2,419	12.0
Industrial	1,437	7.2
Governmental/Institutional	1,659	8.3
Park, recreation & open space	1,260	6.3
Transportation, Communication & Utility	3,206	16.0
Water	725	3.6
Total	20,080	



City of Novi, Michigan – Assets to Manage


- **198 miles** of major roads and neighborhood streets
- **4,597** traffic & informational signs
- **4** major bridges
- **318 miles** of sidewalks and multi-use pathways
- **330 miles** of water main
- **4,194** fire hydrants
- **13,530** water service connections
- **263 miles** of sanitary sewer main
- **6,759** sanitary manholes
- **926 acres** of parkland in **12** parks
- **32,443** tree sites along streets & on City-owned property
- **280** vehicles and major pieces of equipment in the City's fleet





Planting the Seed - CMMS Findings Report (2007)

- Analysis and recommendations for implementing a CMMS solution for DPS – Water & Sewer Division
 - Presentations of three CMMS applications: Cityworks, CarteGraph, Hansen
 - Interviews with City staff
 - Demos from software vendors with City data to address our CMMS needs
 - Discussion about advantages/disadvantages of each solution
- **Goals to accomplish through use of CMMS program:**
 - Enhance workflow and establish more organized operations
 - Track and report labor, equipment, materials, and cost used for maintenance
 - Reduce the number of paper forms used for documentation
 - Provide a method to accurately predict budget and justifying resources
 - Track citizen complaints
 - Develop an improved method of data management for existing assets
 - Provide IT infrastructure that will support growth
 - Integrate with more departments to become a City-wide solution



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City of Novi
cityofnovi.org

CMMS Findings Report Recommendations

- **Phased approach**
 - Phase 1: Water & Sewer
 - Phase 2: Remaining DPS
 - Phase 3: Additional departments & mobile operations
- **Data gathering**
 - Identify type of reports or maps needed then work backwards to determine information required to collect & maintain
- **Field Operations Considerations**
 - Roads, catch basins, signs, snow removal, mowing, drains
- **GIS Database Management**
 - Migrate to ArcSDE
 - Current staffing level may threaten success of CMMS implementation
- **Additional considerations**
 - Engineering
 - Integration of sanitary sewer videos and inspections
 - SCADA integration



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Nurturing the CMMS Seedling (2007-2011)

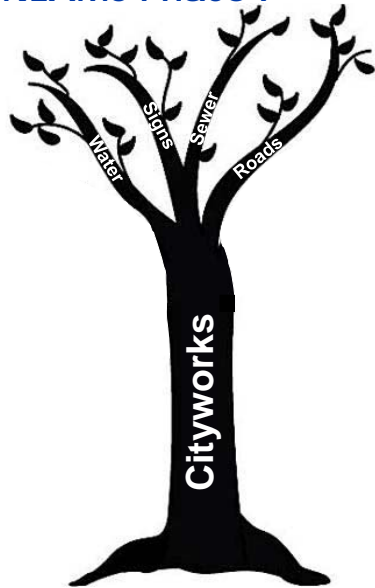
- **2008-2012 – The Great Recession**
 - Taxable property value fell 18.6% from peak in 2008 to 2012
- **March 2009 – Department of Public Services reorganization**
- **Fall 2009 – Commitment from City Manager to support asset management system**
- **2010 – Investigation of Cityworks as preferred asset management solution**
- **Winter 2011 – CIP for Novi Enterprise Asset Management System (NEAMS) submitted for FY2011-2012 budget**
- **Fall 2011 - RFP Issued for Cityworks integration services & vendor selected**
 - Integration Partner – POWER Engineers



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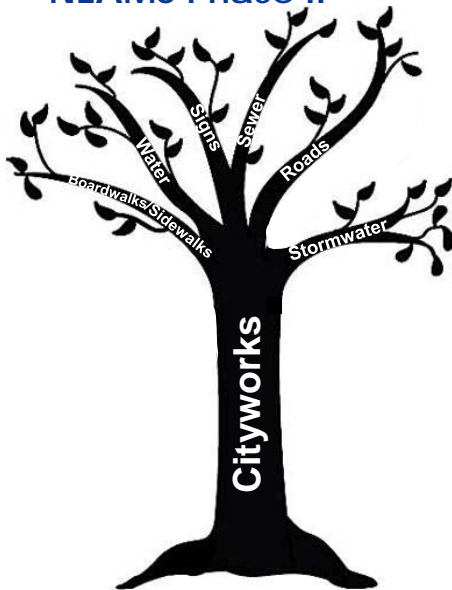
Growing an Asset Management System NEAMS Phase I



- January 2012 – May 2012
- Asset classes included
 - Water Distribution System
 - Sewer Collection System
 - Roads
 - Signs
 - Related objects to sign supports
- Project highlights
 - Acquisition of hardware & software
 - Cityworks configuration
 - 116 service request types
 - 163 work order types
 - ArcSDE/SQL Server implemented
 - Connection to UB for meter information
- Project management using Basecamp online tool



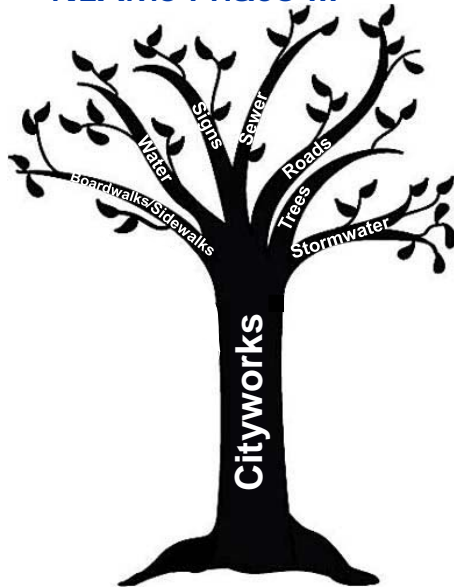
Growing an Asset Management System NEAMS Phase II



- October 2012 – January 2013
- Asset classes included
 - Boardwalks/Sidewalks
 - Curb ramps
 - Stormwater
- Project highlights
 - Cityworks configuration
 - 23 service request types
 - 40 work order types
 - 6 inspections
 - Upgrade to Cityworks 2012 & ArcGIS 10.1
 - Identify tool from POWER Engineers implemented



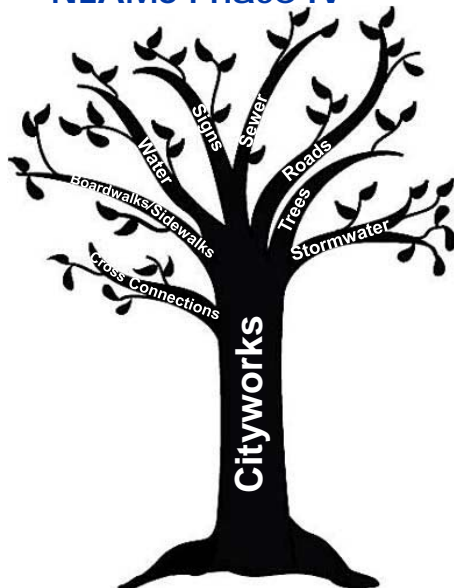
Growing an Asset Management System NEAMS Phase III



- **January 2014 – April 2014**
- **Asset classes included**
 - Tree Sites converted from Davey TreeKeeper 7
- **Project highlights**
 - Cityworks configuration
 - 5 service request types
 - 20 work order types
 - Upgrade to Cityworks 2013 & ArcGIS 10.2
 - Pruning Schedule layer developed
 - Landscape Architect from Community Development Department included to manage planting projects
- **Tree Inventory Update**
 - Capture missing & new tree sites using GPS



Growing an Asset Management System NEAMS Phase IV



- **October 2014 - Present**
 - Expand commercial inspections to 13,000 residential customers per MDEQ
- **Asset classes included**
 - Backflow prevention devices/cross connection locations
 - Building footprints with related table
- **Project highlights**
 - Cityworks configuration
 - Cyclical work orders & inspections
 - Reports
 - Form letter with mail merge based on inspection cycle (1 yr, 3 yr, 5 yr)
 - MDEQ statistics
 - Upgrade to Cityworks 2014 & ArcGIS 10.3



Transplanting Cityworks



- **October 2014 – March 2015**
- **Mobile solution requirements**
 - Device with Windows OS to support SCADA
 - Ability to create service requests, work orders, and inspections in the field
 - Capture photos to attach to work activity
 - Secure connection to City network
- **Field Tablets**
 - Motion Computing CL920
 - NetMotion VPN connection
- **Benefits**
 - Reduced paper workflow
 - More time spent in the field
 - Streamlined photo attachment process
 - Printing from the work site
- **Lessons Learned**
 - Training in small groups
 - Verizon “optimizes” devices

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Branching Out Beyond Asset Classes

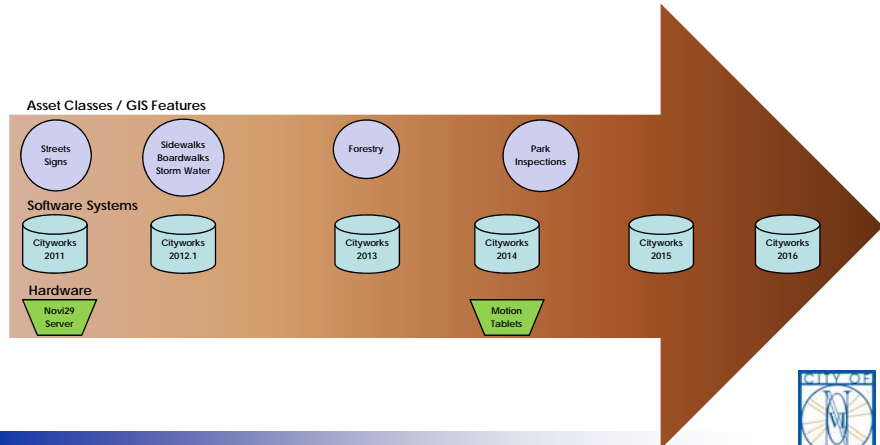


- **PipeLogix integration**
 - CCTV camera system & software
- **Additional workflows**
 - Street light inspections
 - Park inspections & work orders
 - Tap card conversion (future)
- **Cyclical inspections**
 - Boardwalks
 - Detention Basins
 - Lift Stations
 - Valve Turning
- **Reports**
 - 15 reports created using Crystal Reports
- **GIS data analysis**
 - SAW Grant application
 - Sewer system capacity study



Field Operations Roadmap

FY2011-12		FY2012-13				FY2013-14				FY2014-15				FY2015-16				FY2016-17			
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

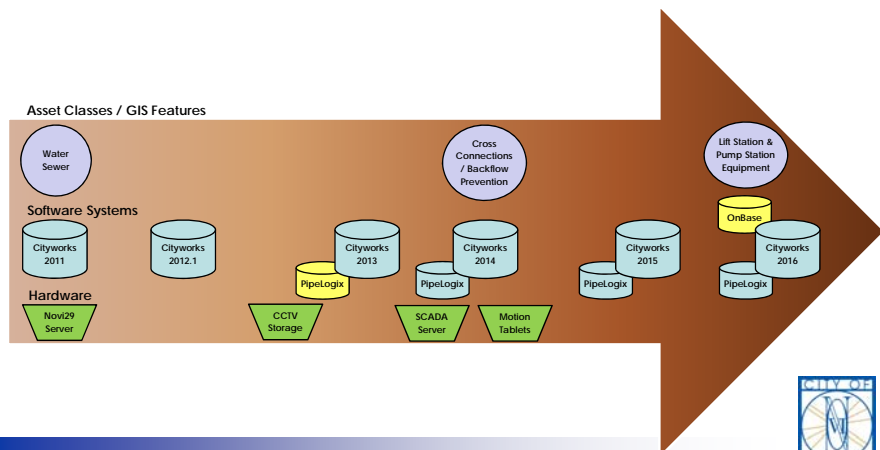


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Water & Sewer Roadmap

FY2011-12		FY2012-13				FY2013-14				FY2014-15				FY2015-16				FY2016-17			
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

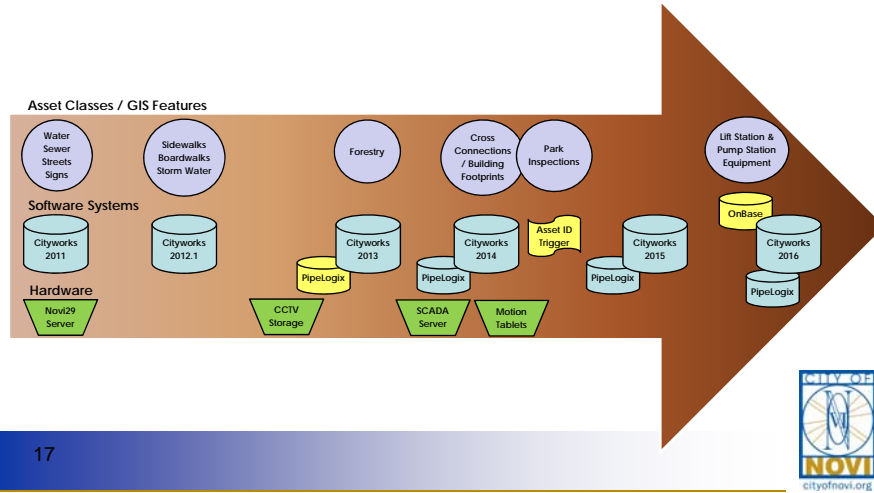


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NEAMS Roadmap

FY2011-12		FY2012-13				FY2013-14				FY2014-15				FY2015-16				FY2016-17			
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4










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Fruits of Our Labor

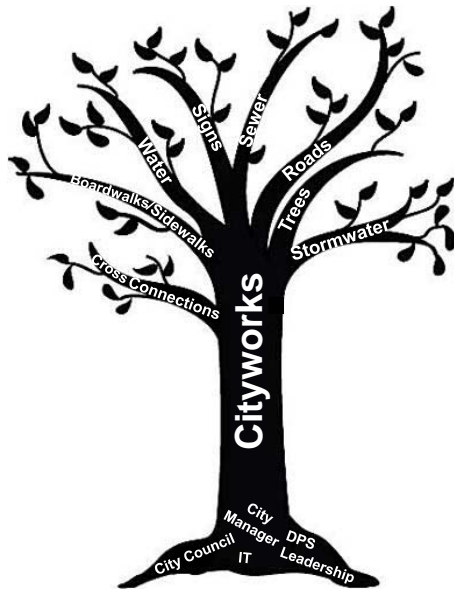
Goals from Findings Report:

-  Enhance workflow and establish more organized operations
-  Track and report labor, equipment, materials, and cost used for maintenance
-  Reduce the number of paper forms used for documentation
- 4. Provide a method to accurately predict budget and justifying resources
-  Track citizen complaints
-  Develop an improved method of data management for existing assets
-  Provide IT infrastructure that will support growth
-  Integrate with more departments to become a City-wide solution

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Encouraging System Growth



- **Support builds a solid foundation**
 - City Council
 - City Manager's Office
 - DPS Leadership
 - Information Technology
- **Producing results creates confidence so the system thrives**
 - Reports
- **Listen to and learn from the users**
 - Enhancements
 - Configuration changes
 - Gain efficiencies
- **Training**
 - New users
 - Software upgrades



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Cityworks Michigan RUG

September 9, 2015

Novi City Hall & Civic Center

