

PLANNING TRENDS

- Supporting Text and Data -

To be sustainable means improving the quality of people's lives while living within the capacities of supporting natural and human systems.

Cities and suburbs are constantly changing and recent trends are certainly presenting new challenges. Consumer, developer, workforce and municipal expectations continue to evolve and urban development must react accordingly. The listing below includes both planning trends and potential paradigm shifts that are occurring naturally and where policy focus might be considered. These trends interrelate across all planning disciplines and should be addressed with consideration to proven traditional planning strategies.

A. Climate

There is reliable empirical evidence that proves human-caused change is real and affecting our planet at an alarming rate. Development processes that implement more resilient infrastructure protection and that plans for post-disaster implementation should become a community priority.

Data Point	Description
Rising Seas	Global sea levels rose nearly 8 inches of the last century and studies show that levels will rise by another 1-4 feet by 2100 (IPCC)
Surface Temps	Planet surface temperatures have risen by nearly 2 degrees since the late 19th century due to increases in human-made emissions and carbon dioxide (NOAA) Most of the warming has occurred within the last 35-years, with 16 of the 17 warmest years on record occurring since 2001 (NASA) The average US temperature in 2100 is projected to increase by 3-12 degrees (EPA)
Warming Oceans	Oceans buffer global warming by absorbing heat and carbon dioxide generated by humans. The top 2,300 feet of the ocean's surface has warmed .302 degrees since 1969 (NASA)
Shrinking Ice Sheets	Polar ice loss has contributed about 20% to sea level rise since 1992 (NASA) Greenland lost 152 billion tons of ice, West Antarctica lost 65 billion tons of ice, and the Antarctic Peninsula lost 20 billion tons of ice since 1992 (NASA)
Weather Events	Warming and rising seas are changing patterns of precipitation and storm events. By the end of the century, the intensity of precipitation events will likely increase on average, as will the intensity of tropical storms and hurricanes (NASA)
Rising Humidity	Weather station measurements are showing increased humidity through the amount of water vapor in the air. Another trend that is indicating change to earth's atmosphere (NOAA)
Reduced Snow Cover	Between 1955 and 2016, the depth of snow on the ground, or snowpack, in early spring in the western United States decreased by more than 90%, while the average portion of North America covered by snow between 1972 and 2015 decreased at a rate of about 3,300 square miles per year (IPCC) By 2100, snow cover in the Northern Hemisphere is expected to decrease by about 15%, producing shorter snow seasons and a decreased snowpack in many regions. In northern latitudes, the permafrost is expected to continue to thaw, with damaging effects to buildings, infrastructure and ecosystems in Alaska (IPCC)
Retreating Glaciers	Glaciers provide irrefutable clues about the effects of global warming because they are so sensitive to temperature fluctuations (NSIDC) Glaciers in the United States and around the world have generally shrunk since the 1960s and the rate at which glaciers are melting has accelerated over the last decade (EPA)

Ocean Acidity	Acidification of oceans occurs as human-produced carbon dioxide is absorbed by the oceans. Acidification imperils marine wildlife, particularly shellfish, which impacts the entire marine food chain, including humans
	The acidity of surface ocean waters has increased by about 30% since the beginning of the Industrial Revolution (NOAA)
	The amount of carbon dioxide absorbed by the upper layer of the oceans is increasing by about 2 billion tons per year (NOAA)
	By the end of this century the surface waters of the ocean could be nearly 150 percent more acidic, resulting in a pH that the oceans haven't experienced for more than 20 million years (NOAA)
Coral Reefs	When corals are stressed by warming temperatures in the oceans, they expel the symbiotic algae living in their tissues, which causes them to turn completely white (NOAA)
	In 2005, the United States lost half of its coral reefs in the Caribbean in one year due to a massive bleaching event (NOAA)
	Scientists have recently declared that the world's largest and most treasured reef in the world (Australia's Great Barrier Reef) is 'terminal' after years of bleaching due to temperature increases

B. Retail Evolution

Ecommerce sales have risen significantly over the past several years with sales projected to increase from 1.3 trillion in 2014 to 4.5 trillion in 2021 (Statista, 2019). This suggests a threefold increase over a 7-year span. The increase in online shopping can be attributed to a number of factors and is rising in part due to the user comfort level and the trusted website experience offered by the Eretailer.

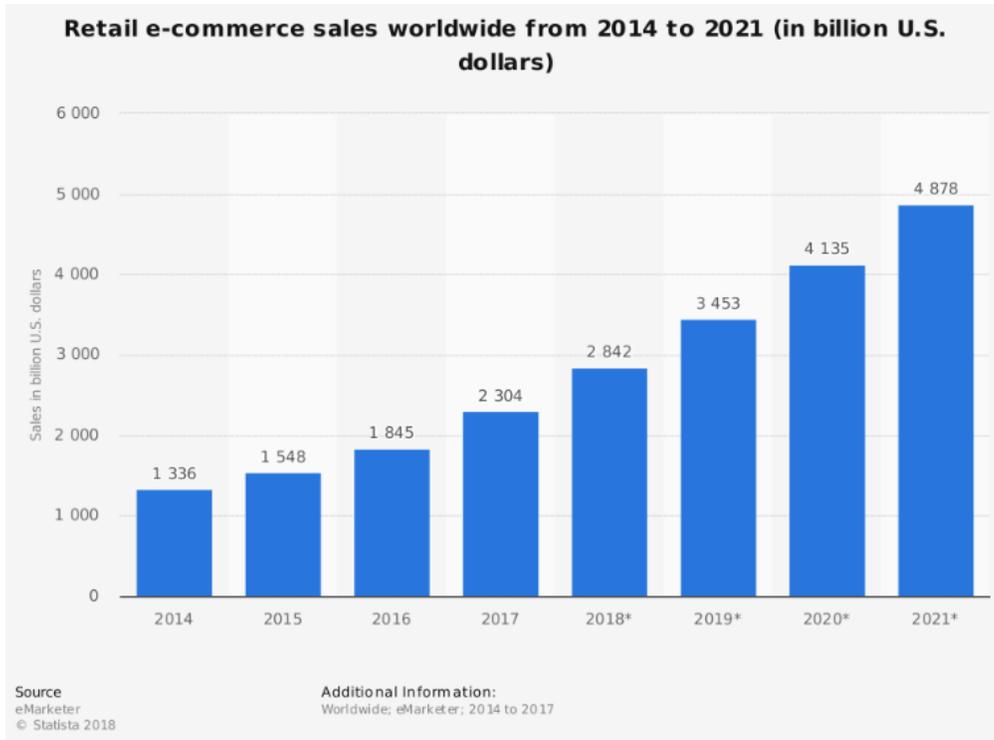
Planning implications include a growing number of brick/mortar store closings, many of which are converting to Efulfillment centers. Policy should recognize the impacts of Ecommerce on freight deliveries, the design of transportation facilities and the inevitable changes Ecommerce will bring.

Summary: Ecommerce Trends

Here's a summary of Ecommerce Trends for 2019:

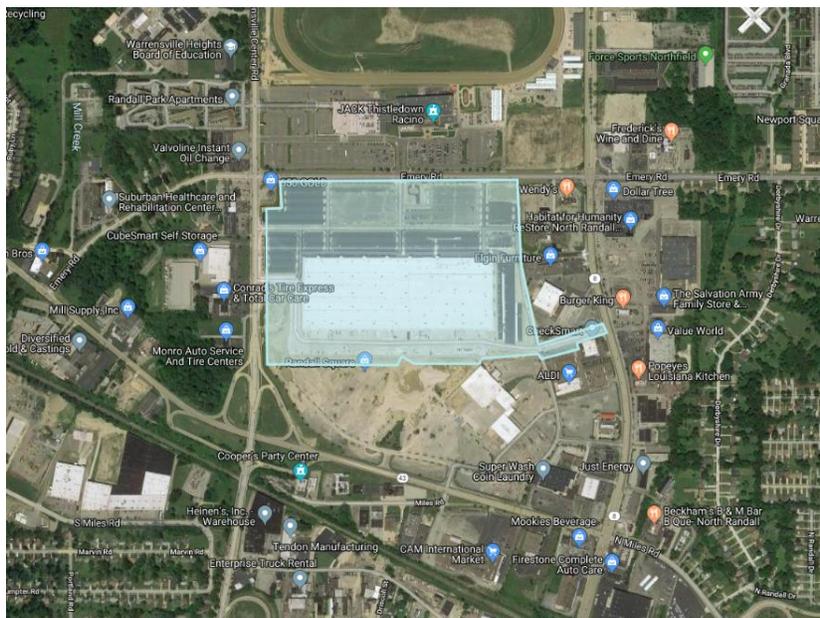
1. Ecommerce sales are projected to increase from 1.3 trillion in 2014 to 4.5 trillion in 2021 This would mean a threefold growth over a 7-year span.
2. Green consumerism is on the rise due to environmental topics influencing buyers.
3. By the end of 2021, 73% of ecommerce sales will take place on a mobile device.
4. 13% of U.S. smart speaker owners say they were making purchases by voice at the end of 2017. That number is predicted to grow to 55% by 2022.
5. The number of social shoppers is rapidly increasing with the introduction of the "Buy" button on Facebook and Instagram Checkout.
6. Use of mobile payments has grown rapidly, from 26% of the online population in 2016 to 37% in 2018.
7. Global retailer spending on AI will reach \$7.3 billion per annum by 2022, up from an estimated \$2 billion in 2018.
8. By 2022 over 120,000 stores will be using AR technologies offering a much richer buying experience.
9. More than 50% of shoppers say a personalized experience online is important. 74% of marketers believe personalization has a "strong" or "extreme" impact on advancing customer relationships.
10. The subscription ecommerce market has grown by more than 100 percent a year, over the past five years.

<https://www.oberlo.com/blog/ecommerce-trends>



Amazon fulfillment center to replace Randall Park Mall

The Port of Cleveland announced plans to transform the vacant Randall Park Mall into an Amazon.com fulfillment center.



C. Autonomous Mobility

The private automobile has played a major role in shaping the built form of cities and suburbs. In almost all communities, development and land-use patterns during the 20th century reflect policies and planning that prioritized it over alternative means of transportation. Although the automobile was originally seen as a technological advance that would improve society as a whole, market conditions and policies yielded a sprawling development pattern with negative environmental, social, and economic impacts.

Like the changes to society already brought by shared mobility and digital ride-hailing services, AVs are poised to disrupt the built environment and planning practices in ways that may be hard to imagine and will be difficult to immediately determine. While the private automobile yielded a 20th century dominated by suburban expansion, AV technology has the potential to support and promote urban (re)development for the next century.

That said, AV technology might also reinforce urban sprawl by reducing the monetary and perceived costs of travel, further decreasing the friction of distance for households and businesses. Regardless, communities must begin planning for AV advancements now to ensure that this new technology is harnessed in beneficial ways and with the full understanding that AVs will have important ramifications on several other key planning areas, including transit, public health, and social equity.

Autonomous Vehicles	
Potential Benefits	Improve the safety and efficiency of transportation systems
	Reduce vehicle emissions
	Improve the mobility of transportation-disadvantaged populations
Policy Considerations	Altering the design of rights-of-way
	Changing access management practices
	Influencing the form and function of traffic signage and signalization
	Altering pedestrian and bicycle networks
	Reducing the demand and altering the design and location of parking
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	Creating redevelopment opportunities in urban and suburban locales
	Need for drop-off zones
	Need for vehicle storage or circulators for vehicles as they await users
Need for expensive new transportation infrastructure to maximize the benefits of the technology	

Parking

With rising popularity of shared car and on-demand ride services, car use may be leveling out even before the real arrival of self-driving vehicles. So much so that many traffic engineers are projecting that the US may have peaked when it comes to parking and the need for parking spaces.

D. Place Making

PLACEMAKING AND DESIGN	
Residential Design	Decades of suburban sprawl led to the creation of boring, single use developments and empty downtowns
	There is renewed interest to create real places that keep residents, employees, visitor and shoppers engaged
	There is rise in number of people seeking a downtown style of living that provides for access to dining, less maintenance, and less driving
Retail Design	Retail analysts predict a seismic shift in shopping center and regional mall developments, with as many as 25% in danger of closing
	Simple replacing empty square footage with more retail will not cut it. Shopping centers will need to take advantage of their assets which include underutilized acreage (parking), good visibility and good access
	Real changes will be needed to remain relevant and part of that change includes reimagining larger shopping centers as a complete Town Center
	Nationally many malls are already evolving into mixed residential, hotel, office, and educational campus uses
Design for Health	There is growing interest to incorporate wellness concepts into design
	Bike lanes and sidewalks are necessary in support of an active lifestyle
	Residents are demanding a robust parks and recreation program with a focus on active parks
	Farmers markets not only provide for locally grown fresh fruits and vegetables but also serve as a lively gathering center
	Open space, when combined with wellness interests and cycling opportunities, creates a richer quality of life and a real dollar value to the community
Experience	Franchise architecture and cookie-cutter designs are declining nationally as developers rediscover the importance of leveraging authenticity and context
	Providing an experience and sense of ownership is necessary to assure return customer business
	Studies are consistently showing that open space and unique destination development offer both experience and real dollar value
	The importance of experience will continue as we seek to reinvent existing developments, as well as creating new ones

Check out Walk Score to measure the walkability and pedestrian friendliness of your home address. Transit Score will help you assess how transit friendly your location is and Bike Score will measure your area for biking opportunities. Walk Score, Transit Score, and Bike Score can be found at <https://www.walkscore.com/>

A Framework for Experience

HOW DESIGN DRIVES EXPERIENCE

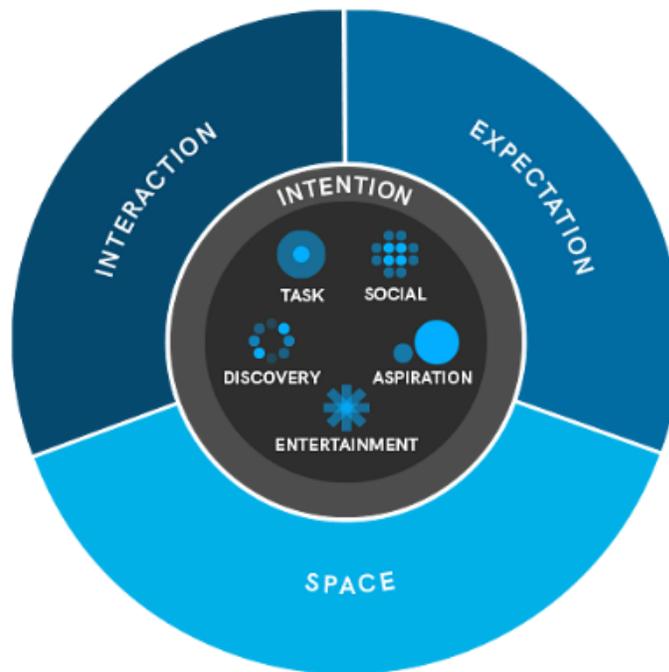
To document the full suite of factors that create a great experience, we developed our Experience Framework. At its core is a user's intention — our “experience modes.” When we understand a person's intentions, expectations, and behavior in the context of a space, we can begin to define the quality of their experience.

Experience
Framework

Expectation

Interaction

Space



<https://www.gensler.com/research-insight/gensler-research-institute/experience-index>

E. Energy/Environment

When we focus on improving the following aspects of our communities, we improve public health by providing cleaner air and water for our residents. We also support a growing renewable energy economy and insulate our communities from energy disruptions that could be caused by natural disasters.

Green Infrastructure

Green Infrastructure is the network of natural lands across the landscape (i.e. forests, wetlands, stream corridors, grasslands) that work together as a whole to provide ecological benefits. This broad definition includes both landscape-scale natural features and site-scale practices ranging from reduction of impervious cover to stormwater best management practices, such as bio-retention and stormwater wetlands.

Municipalities will need to look to Green Infrastructure practices as storm frequency and intensity increases.

Green Infrastructure	
Benefits	Improved Water Quality and Quantity
	Improved Air Quality
	Climate Resiliency
	Habitat and Wildlife Improvement and Connectivity
	Community Benefits and Value
Structural Practices	Infiltration Basin, Infiltration Trench, Infiltration Berm and Retentive Grading
	Vegetated Swale, Vegetated Filter Strip, and Vegetated Roof
	Raingarden/BioRetention
	Landscape Restoration, Riparian Buffer Restoration, Soil Amendment and Restoration, Floodplain Restoration
	Runoff Capture and Reuse
	Dry Well/Seepage Pit
	Constructed Filter and Constructed Wetland
	Wet Pond Retention Basin and Dry Extended Detention Basin
	Pervious Pavement with Infiltration Bed and Subsurface Infiltration Bed
	Water Quality Filers and Hydrodynamic Structures
	Level Spreader and Special Detention Areas

Stormwater MS4

Polluted stormwater runoff is commonly transported through municipal separate storm sewer systems (MS4s). An MS4 is a conveyance or system of conveyances that is owned by a municipality and designed or used to collect or convey stormwater through storm drains, pipes, and/or ditches. To prevent harmful pollutants from being washed or dumped into MS4s, certain operators are required to obtain permits (NPDES) and develop stormwater management programs (SWMPs). The SWMP describes the stormwater control practices that will be implemented consistent with permit requirements to minimize the discharge of pollutants from the sewer system. Municipalities will need to exhaust resources and manage MS4 best management practices as storm frequency and intensity increases.

National Map of Regulated MS4s



Floodplains

According to the Federal Emergency Management Agency (FEMA), a floodplain is any land area susceptible to being inundated by floodwaters from any source. Municipalities will need to continue to develop and overall program of corrective and preventive measures for reducing flood damage, including but not limited to, emergency preparedness plans, flood-control works and floodplain management regulations. Consideration should be afforded to improving the municipal National Flood Insurance Program's (NFIP) Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed minimum National Flood Insurance Program (NFIP) requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: 1.Reduce flood damage to insurable property; 2.Strengthen and support the insurance aspects of the NFIP, and 3.Encourage a comprehensive approach to floodplain management.

Air Quality (Greenhouse Gas)

The Clean Air Act requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants (also known as "criteria air pollutants"). These include:

- Ground-Level Ozone
- Particulate Matter
- Carbon Monoxide
- Lead
- Sulfur Dioxide
- Nitrogen Dioxide

The Lehigh Valley maintains generally acceptable levels in most categories but is in 'non-attainment' for ozone and in 'maintenance' for particulate matter. Much of this is attributable to vehicle exhaust indicating the need to assure mobility alternatives with all developments.

Energy Independence and Security

Signed on December 19, 2007 by President Bush, the Energy Independence and Security Act of 2007 (EISA) task the EPA with the following:

- ✓ Move the United States toward greater energy independence and security;
- ✓ Increase the production of clean renewable fuels;
- ✓ Protect consumers;
- ✓ Increase the efficiency of products, buildings, and vehicles;
- ✓ Promote research on and deploy greenhouse gas capture and storage options;
- ✓ Improve the energy performance of the Federal Government; and
- ✓ Increase U.S. energy security, develop renewable fuel production, and improve vehicle fuel economy.

Key provisions already enacted are corporate average fuel economy standards, renewable fuel standards, and appliance/lighting efficiency standards. Municipalities should continue to focus on developing, implementing, and revising regulations and voluntary programs in support.

F. Public Safety (EMS)

The number and severity of man-made and natural disasters (i.e. mass shootings and extreme weather events) are requiring local government and regions to rethink the ways in which they protect the public, deliver crisis management assistance, and allocate funds for these activities.