Climate Adaptations and Futures Webinar Series:

Climate-Smart Land Use Planning

Climate-Smart land use planning is a broad term that encompasses many planning approaches that mitigate and/or adapt to our changing climate. This webinar & key takeaways focus on two major approaches to climate-smart land use that are important to Colorado: transportation demand management (TDM) and green infrastructure.

There are many projects and programs that can integrate climate-smart land use planning into your jurisdictions' work. As a foundational step, consider integrating climate-smart land use planning into your local comprehensive or master plan. For more information about comprehensive plans, see DOLA's Community Development Office website. Two Colorado-based examples of recent comprehensive plans that incorporate resilience and climate change include:

- 2019 Larimer County Comprehensive Plan, which incorporates impacts and recovery from the Hyde Park Fire and 2013 Floods.
- 2019 Town of Green Foundation Falls Comprehensive Plan, which includes resiliency in terms of both natural hazards and economic resiliency. The plan's appendix ties recommended actions to partners and resources.

Climate-Smart Transportation: Transportation Demand Management (TDM) & Reducing Vehicle Miles Travelled (VMT)

Background & State Initiatives:

The Colorado Department of Transportation (CDOT) has now released a revised policy that requires local jurisdictions to provide a TDM strategic plan as part of interchange project proposals.

- Interchanges include ramps, merges, or other infrastructure for merging State roads into the local roads.
- CDOT recognizes the importance of multi-modal transportation and has taken this step to align with the State GHG Roadmap and reduce congestion.
- The TDM Scorecard will be used in evaluating proposals and will help the local jurisdiction hit target goals of a reduction of average daily traffic (ADT) by 1-3%. Examples of TDM Strategies from the TDM Scorecard are on the last page of this document.

Case Study: Winter Park's Public Transit

Feedback from the 2015 Fraser Valley Strategic Economic Development Plan prioritized increased public transit in the Town of Fraser and Town of Winter Park. This led to the transition from a private, winter-only public transit system to the now publicly-funded and publicly-managed The Lift transit system -- a year-round, free transit system connecting Winter Park, Fraser, and Granby.

- Funding for some of the transition came from:
    - The new publicly-funded system 2% Sales Tax from Winter Park and 1% Sales Tax from the Town of Fraser.
    - A new transit facility will be constructed for housing the fleet and operations. The Lift is using funding from the Federal Transit Administration (FTA) 5339b grant ($12M) and State funding from the 2017 Senate Bill 267 ($2.6M).
- To launch a successful public transit system, the Town highlighted the following areas:
    - **Accessibility & Paratransit:** The fleet was made to be ADA-compliant, which not only helped the community, but it also made the project eligible for State and federal funding. Since upgrading the fleet and making it year-round, there was a 300% increase in Paratransit Ridership.
    - **Sustainability:** In addition to adding solar panels to the new facility, the Town is planning now for an electric fleet by 2035.
    - **Marketing:** There is a Ride System App Updates to marketing including a Ride System App (including real-time bus times available using a QR code on every bus stop)
    - **Connecting with larger transit hubs:** The Town is taking part in the CDOT "Connected Colorado" program (part of the Innovative Mobility Department) for connecting the local fleet to other public transit networks.

Art & Transit
The use of art in the transit system can contribute to placemaking while attracting greater transit ridership. Find out Smart Growth America's article on Art & Transportation to learn more.

Climate-Smart Development: Green Infrastructure

Green infrastructure is a solution to the combined problems of urban heat island, increased flooding and erosion, poorer water quality, and algal blooms.

- Low Impact Development (LID) -- an approach to development (or re-development) that works with nature to manage stormwater as close to the source as possible (e.g., preserving and re-creating natural landscapes; decreasing impervious services; and treating stormwater as a resource rather than waste product).
- Green Infrastructure -- systems and practices that use or mimic natural processes to infiltrate, evapotranspirate, and reuse stormwater runoff. Examples of green infrastructure discussed in the presentation include:

- Constructed wetlands -- provide habitat and open space, however, in Colorado there can be barriers to obtaining the water rights. For more information, visit Colorado Wetland Information Center
- Permeable Pavement -- provides a driving surface while allowing infiltration. Colorado-based examples include the Mile High Flood District and the Odell Brewing Company in Fort Collins.
- Green Roofs -- Reduces runoff and heat island effect. Increased energy savings, but irrigation required while establishing vegetation. Additional information on Green Roofs and Growing Green Roofs in Denver presentation by Dr. Jennifer Bousselot.
- Rain Gardens / Bioretention Planters -- Slow, capture, and infiltrate stormwater runoff. A great example was installed by the City of Fort Collins in Library Park.
- Vegetated Swales / Bioswales / Buffers -- adds vegetation to increase infiltration

- Other resources for implementing green infrastructure:
  - Overcoming Barriers to Green Infrastructure (EPA)
  - The Colorado Stormwater Center offers training opportunities and a number of helpful resources such as an Inspection and Maintenance Field Guide and a Best Management Practices Overview.
  - More EPA Resources:
    - Green Infrastructure Webcasts
    - Green Infrastructure Research
    - Green Infrastructure Performance
    - Green Infrastructure in the Semi-Arid West

  - Because cost can be a barrier to adopting green infrastructure, these resources can help you compare costs and get funding:
    - The Green Values Calculator can help you to compare costs of different green infrastructure features.
    - The Mile High Food District provides a Colorado-focused Excel file and PDF that will breakdown different green infrastructure strategies and costs.
    - EPA manages this list of federal and non-federal funding sources for green infrastructure.
    - Find out more about financing green infrastructure projects and other funding sources here (NRPA, APA).

Case Study: Town of Ridgway

The Town of Ridgeway, with a small population of ~1,000, included many of the following water use strategies in their Master Plan and Capital Improvement Plans.

- **"Bioswales" or "swales" and raingardens** are channeled depression or trench that receives rainwater runoff and has vegetation and organic matter (such as grasses, flowering herbs, shrubs, mulch and gravel) to slow water infiltration and filter out pollutants. Ridgway installed various types of swales and raingardens that reduced flooding and irrigation needs, while also creating aesthetically pleasing landscapes.
    - TIP: They did learn that swales and raingardens can be higher maintenance and can sometimes get washed out from a large rain event, so design and placement are important decisions.
- **Water use restrictions:** Rigway enforced a water wasting ordinance that has been beneficial to define "water wasting" and point to during times of drought.
    - TIPS:
        - Ridgway encourages building relationships and working with local landscapers to inform the water wasting ordinance.
        - Restrictions are only as effective as the communications behind the restriction -- behavioral changes
- **River Overlay District (see image):** Ridgway created the Uncompahgre River Overlay District (UROD), which was called for in the Town's Master Plan as a way to protect their local river as a valuable natural assets as development pressures in the town grow.
    - The Overlay includes setbacks, design guidelines, access for public, protections of important natural assets in the Town as well as (through setbacks) providing assurance that infrastructure won't be built in vulnerable areas.
    - TIPS:
        - Ridgway referenced the DOLA Planning for Hazards Guide in creating this overlay district, as well as other comparison metrics.
        - The town also hosted 12 public meetings to assuage resident concerns about property values and restrictions on their private property.
- Water System Interconnection -- Ridgway completed a Water System Interconnection in 2020 to provide the ability for Ridgway to receive water from their neighbors in times of emergency. DOLA was an important partner in terms of funding and technical assistance.

Figure 1: Uncompahgre River Overlay District

Appendix 1: Examples of TDM Strategies

The following scorecard showcases the CDOT's TDM Strategy Scorecard

Parking Management -located at the new interchange at business parks, commercial retail locations, or residential communities	60	10 Years
Bus Only Lanes, Queue Jumps, Bus Slip Ramps -facilities can be either on-system or off-system and can be built on adjacent or parallel facilities	60	Maintenance in perpetuity
Local Transit- the expansion of local transit must serve any new development that will be located at the new interchange location	60	5 Years
Creation of a Transportation Management Association / Organization	50	3-5 Years
Bicycle and Pedestrian Facilities - including infrastructures such as bike lanes, bike trails, multi-use trails, sidewalks, or a pedestrian overpass.	40	Maintenance in perpetuity
Regional Ridesharing Programs - including carpool matching	40	5 Years
Car-sharing – note that this strategy could be market driven	40	5 Years
Micro-Mobility Sharing Programs - including bike-sharing, scooter-sharing, and E-bikes (Some of these strategies are market driven.)	40	3 Years
Transit Service Upgrades - this may include operational improvements such as bus signal queue jumps, covered bus shelters, etc	40	Maintenance in perpetuity

TDM Strategies	Points	Time Commitment of Strategy
Multimodal Hubs - the multimodal hub will include two or more transit services/multimodal options available*	80	5 Years
Shuttles, Feeders, and Paratransit - public or privately operated	80	5 Years
Vanpool Programs – regional vanpools operated by MPOs or private vanpools	80	5 Years
Mixed-use Development - the new interchange is constructed at a high quality pedestrian environment improvements/transit-oriented development	80	Maintenance in perpetuity
Intercity Transit - these improvements could be implemented on adjacent or parallel facilities	80	5 Years
Comprehensive ITS Solution - ex. congestion-reducing adaptive signal optimization, connected vehicles, and transit signal priority, etc	80	Maintenance in perpetuity