Part 1: Landscapes

Slide 1
Hello and thank you for having me here. My name is Graham. I'm from Brandon. Here's where I was educated. My topic is reducing energy demand through spatial planning.

Slide 2
The climate change apocalypse is here and it's only going to get worse. We need to do everything we can to stop producing excessive greenhouse gas emissions since every emission contributes to climate change. That means no new gas, oil, coal, or nuclear power plants. All of our activities need to be evaluated to find potential energy savings, emissions reductions, and carbon storage.

Slide 3
Industrial carbon capture produces a toxic sludge that needs to be managed, and it's still unknown if it actually works.
Natural landscapes, like forests, bogs, and prairies, store water and carbon, support biodiversity, improve air, water, and soil quality, moderate temperatures, and have positive outcomes for physical and mental health.

Slide 4
Asphalt landscapes seal the ground, prevent the development of natural landscapes, and reduce the capacity for water and carbon storage.
Energy consumption increases, in terms of maintenance and illumination, with the amount of land sealed by streets and parking lots. The standard suburban designs used in Manitoba facilitate higher levels of energy consumption, especially by fostering car dependency and creating unnecessarily long travel distances. Asphalt absorbs heat and increases surface temperatures on hot days, which results in a higher demand for air conditioning.

Slide 5
Here's a light pollution map that shows the excessive use of lights at night in southern Manitoba. This is wasted energy. Higher urban density would reduce the need for street lights.

Slide 6
Lawns prevent the growth of natural landscapes, don't store carbon, don't support biodiversity, don't contribute to cooling, and require energy to be maintained. Here is a picture from the southern part of Brandon in 2014 and the same spot in 2026. Mature trees unnecessarily removed. Biodiversity reduced to a single plant and black houses that absorb heat.

Slide 7
Modern buildings are energy consumption machines. Buildings seal the ground. The greater the size, the greater the demand for heating, cooling, lighting, and other electronic functions. Pictured is a satellite image from 2014 of Kingsway Court. The people living here were evicted and the mature trees killed for more expensive apartments and a parking lot. This happened on the other side of Highway 10 with the removal of the first rows of trailers in Brentwood for a hotel, restaurant, car dealership, and parking lots.

Slide 8
Zooming out, we can see the bigger picture of greenspace loss and the creation of car dependent neighbourhoods. Unless there is an effort to stop urban expansion, Manitoba's towns and cities will

continue to consume productive fields, essential greenspaces, reduce the potential for carbon capture, and drive up energy demand.

Slide 9
This building was constructed to house a Sobeys. Sobeys was in the Shoppers' Mall across the road. They moved here for a few years and then back into the mall again. Sobeys still leases this building to prevent competitors from moving into the area. It's a huge waste of space and energy. The heat is on and the lights are on. The area should be returned to a natural landscape, if it's not serving a social purpose.

Slide 10
This is a new commercial building less than a kilometre from the one in the last slide. Two houses and a few mature trees were removed to make room for it. A total waste during a housing shortage, since unused commercial space exists nearby.
The building could have added to the housing stock by putting apartments on the upper floors, but so close to the highway, I can understand that this location is unappealing.
Instead of developing individual properties and business people manipulating the urban landscape to benefit themselves, development needs to be organized in a way that reduces energy consumption, improves lives, and serves the people who live here.

Part 2: Urban Density

Slide 11
The greater the distance between places, the more likely people will drive rather than walk or bike. Distances make public transit ineffective. Electric cars aren't much better, the only difference is the fuel comes from the grid rather than the pump.

The compact city model is an urban design approach that contains all amenities within an easy walking distance from where people live. It's mixed use.
A major reason Paris has become the world famous city we know today is due to the hard boundaries that restrict urban expansion. Planners and architects have been forced to make the most of limited space. As the Parian skyline shows, all of the buildings, other than the Eiffel Tower, are about 7 levels high and close together. It's dense, but human scale.

Slide 12
Over two million people live within the 105.4 km² of Paris. Brandon is approaching a hundred square kilometres, but with only 2.5% of Paris' population. Winnipeg has less than half the population of Paris, but occupies nearly five times the area. Turtle Mountain and Spruce Woods combined are smaller than Winnipeg.

Slide 13
This is the area Brandon would occupy if it had the same population density as Paris. It would have fewer streets to plough after a snowfall, fewer streets to repair in the spring and summer, fewer traffic lights, and fewer street lamps. There would be no need for cars, as long as regional public transportation connections are decent.
It's a little over 2 kms across, which is highly walkable. People should be walking more than 2 kms each day anyway. Urban public transit would be a simple loop, which would likely move more people with less energy than the current system.

Slide 14
I did the same with Winnipeg. This size has all the benefits of the Brandon model. The longest distance across the city would be 10 kms. That's easily bikeable, but for day to day activities everything would be reachable by foot. The public transit system would cover the entire city in shorter, more effective routes than we know today.

Slide 15
This can be achieved through strict zoning. Cities would designate special urban zones and only allow building permits to be issued within these zone. The areas to be included should be selected based on an energy reduction strategy.
There needs to be a master plan that includes block by block building designs that make the most of the limited space for when opportunities arise to change the urban structure.
Design neighbourhoods for people, not cars. Experiment with cohousing neighbourhood designs. Those are neighbourhoods with shared amenities like laundry rooms, kitchens, living rooms, libraries, and child care.
And there needs to be comprehensive protection of buildings of historical interest, trees and other plants, and natural landscapes.

Part 3: Future Plans

Slide 16
I've taken the 100 block between 6th and 7th Street in Brandon as a fragment of what this strategy could look like. Currently there's the abandoned Greyhound Station, the foundation of a burned down building, five commercial/office spaces, and a hotel. The block is roughly 16,000 m² of downtown space. Half of it is unused or underutilized.

Slide 17
Here's a plan that adds 4,000 m² of greenspace and has 4,700 m² of commercial/office space on the main floor.

Slide 18
On the upper levels, there would be 58 residential apartment units per floor, 42 of which could be cohousing. 7 levels would house nearly 2% of Brandon's population.

Slide 19
If people migrate from the suburbs to the urban zone, an agricultural belt could be created within city limits to provide local food and reduce shipping emissions. Climate change will destabilize global shipping routes and cause widespread crop failure, so we need a plan to feed people locally.
The rest would be parkland that supports biodiversity, stores carbon, filters the air and water. There would be hiking, camping, and wild food foraging, at most a little over a kilometre from where people live.
Regular passenger trains or buses would connect Brandon to Winnipeg, Regina, and other towns.
It's a massive transformation, but what I want to emphasize is that ending urban expansion needs to be part of Manitoba's energy efficiency strategy. Manitoba's cities have more than enough space to support much higher populations than we have today, if only developers would stop squandering it.

Slide 20

Here are some other ideas: Shut off public lighting at night and encourage residents to do the same through an education programme that informs people about the harms of light pollution and the benefits of energy reduction. This sign is from a region of southern France where all of the public lights are turned off between 11 PM and 6 AM. Most of the locals do the same and enjoy being able to see the stars at night.

Slide 21

Solar panels over parking lots make better use of parking spaces and provide shade. Manitoba Hydro should take on developing and manufacturing solar panels to make sure that they work for Manitoba's climate.

Slide 22

We can make use of rooftops. Here are soccer pitches and solar panels on an Ikea. Below is a rooftop forest park in Singapore. Depending on the design, green roofs bring many of the benefits of natural landscapes close to where people live and work and can serve as ecological corridors.

Slide 23
That's the end of my presentation. Thank you for your attention. Feel free to contact me if you have any questions, comments, or concerns. And of course I can answer any questions now.