Restorative Development Partnership

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January-February 2021 Workshops 1, 2, and 3: Combined Comments/ Resources and Questions & Answers

Note: The content below was excerpted from the Chat box for all workshops combined and has been generally organized by topic area. Content is generally not attributed unless essential for understanding. Comments, reflections, ideas, and questions are all included, and several related comments may be combined as a single item. Unless otherwise noted, answers to questions below were provided during the workshop or inserted later by Yorth Group consultants Bjorgvin Saevarsson or Katie Eggers, and other consulting team members. Please check out the information and resources on the RDP's website.

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1. Equity, engagement

1.1. How do you define "equity" in the context of this work?

1.2. I see that the next workshop is on equitable communities. However right now at this time in our city with the death of George Floyd we can not discuss equity without acknowledging racism and the need to dismantle systems and institutional racism. I am concerned that I do not see racism mentioned in the materials.

1.3. How does the model account for different "starting places" in terms of equity?

1.4. How does your model account for intervening, catastrophic events like COVID-19 when it comes to equity

1.5. How does this model account for RACE (embedded racism) as a "stress"?

1.6. Are you like so many others who talk about equity without having the impacted parties included in the discussion?

1.7. So, we're going to the perpetrators for concurrence (City)

1.8. This is all very fascinating to see how you have found and applied data to talk about the larger impacts of not thinking about equity within systems and solutions.

1.9. Politics is always a venue where "less desirable things are wrapped within a list of more desirable things" that approach and mindset sets the stage for' "losers". How do we impact this so-called "greater good" approach to political decision-making?

1.10. I like to think of myself and certain others as Assets and Resources to/for the community. Where do people fit into your equation?

1.11. What about citizen and household engagement?

1.12. *Answers, responses, clarifications:*

- In this approach, "equity" is measured across many different performance areas. In our approach to restorative and circular development, there are no liabilities: only assets. If an asset is measured as performing in the net-negative space it is not considered a liability (as per current system), it means it is an asset that requires attention and an approach that turns it into a net-positively producing asset. In this context, all people and communities are "assets."
- Racism comes up many times in the next workshops and, for example, placed in context with long-term community wellbeing and economic consequences.
- This is an issue we are bringing to the forefront when it comes to what industry is developed at the UHT. Jobs now(?) may lead to job loss in 5 yrs or less due to AI
- Zoning prevents birth-death living facilities/homes in many areas. Beautification impacts violence in a neighborhood as well as education.

2. Water

2.1. Is there a place for decentralized capture of water and water re-use as well as the integrated functions discussed today? Yes, absolutely. Restorative development moves us from the current take-make-waste model to one that is circular and local. This project aims to do this in a way that does not only manage resources onsite but also does it in a way that produces the highest social impact possible. Due to climate change, rapid population growth, potentially increasing need from neighboring region, etc., the Mississippi river may not always be the steady and secure water supply as it is today. Future water systems will need to include water reclamation and reuse. This can include local use of greywater that could be an asset for biodomes and urban ag within neighborhoods. Some regions are already developing local capture and treatment of stormwater (stopping pollution from going downstream for others to deal with it).

2.2. Recreation use of water is large - I think the Minneapolis park board uses the most water when filling the ice rinks (with potable water) in the late fall. At UHT we are looking at trying to use stormwater for recreational use. That is excellent. Stormwater, and other captured and treated water, can be used for streams and blue infrastructure within neighborhoods. There is also an opportunity to bring all that water that was buried in the ground to the surface and create water features and beautiful biophilic landscapes. This becomes especially feasible when integrated with vegetation. The integrated utility hub can provide hundreds of tons per year of clean and nutrient rich compost, biochar, other bio-based projects, and urban ag becomes more feasible within this system.

2.3. Using stormwater management, not only for re-use, flood control, and relief for aging infrastructure, but as community pillars, and opportunities for the public to connect to

natural/green/blue spaces, similar to Atlanta's 4th ward. Exactly. It is a good example of local capture of pollutants.

2.4. Metro Bloom case study; http://thealliancetc.org/metro-blooms-case-study/ Don't know that one, sorry. Looks good!

2.5. Time spent in natural systems in general are good for people/mental health, and especially in Minnesota people LOVE water - capturing/storing water for reuse also gives us an opportunity to create storage solutions that provide people access to beauty/calming/mental health benefits of water in their neighborhood. Exactly, see this study that came out last week from Germany to this effect: There's a Curious Effect Urban Trees Might Have on Depression, Study Finds (sciencealert.com)

2.6. I don't know exactly how to operationalize this, but low income areas tend to be disproportionately impacted by high water tables, especially in the last few years that have been way above historical average in terms of rainfall. Those people are also least able to withstand the costs of wet basements (e.g. cutting out moldy drywall and replacing) and then more likely to experience the health impacts of living with moldy drywall. Important to think about how restorative principles can help address this and reduce/eliminate this disproportionate impact.

You are hitting a good and sensitive point that in a conventional setting, would be difficult to make a case for. Example of the municipal challenge: When a neighborhood floods, who bears the burden? The municipality? No, it's the residents and local businesses who bear the burden. Then the insurance companies get the bill (although not always), eventually reinsurers get the final bill. In case of large catastrophic events, reinsurers may stop insuring certain neighborhoods (that are particularly flood receptive). If left unchecked, this development would put tremendous pressure on communities and municipalities alike. BUT, if the municipality does not bear direct cost from these events, where is the incentive to invest? Where will the money come from? This is just an example of the challenges municipalities around the world are dealing with. Naturally, this happens because externalities are not accounted for and because full system accounting is not applied.

In restorative development, municipalities have clear information on the cost of flooding within the entire system. For example, in the Hawthorne McKinley equity case study in Workshop 2, it was pointed out how equity is lost as property value goes down. For the municipality, this is evidenced in a decrease in the tax base" or less taxable income from property taxes. Cost and disruptions from flooding is a big burden for low-income communities. The cost can be too much to manage and long-term impacts of flooding like you mentioned (molding etc) reduces the home value. In restorative economic systems, home values are understood to be critical for intergenerational wealth and consequently, access to education and 'equity'. For the municipality, reduced income within low-wage neighborhoods brings about another pain that is evidenced through another "decrease in the tax base", now in the form of lower income taxes. If left unchecked (as it was for decades), it becomes a downward spiral. Flooding is just one example of how this happens. We hope this explains in some ways how restorative development deals with these issues. Key point is that decision makers will now understand the full costs and benefits so that they can make more informed and better decisions.

2.7. This is especially true since we rarely hear concerns/complaints from these areas, and this tends to be disproportionately the case for areas where the majority of residents are renters.

2.8. How can we better operationalize the Mississippi River without a negative environmental impact Currently, local municipalities have a relationship with the river where water is sourced from the

river, treated, and supplied to the city and some neighboring municipalities. Once used, this water is treated and discarded back to the river. This is the most advanced water treatment and distribution system in the nation and one of the best in the world. But, it is a take-make-waste system that requires an undepletable source. While the current infrastructure is strong, it will be absolutely crucial to explore ways to manage wastewater, and stormwater in ways that generate value at the local level, for example in manufacturing, processing, stormwater for public pools, streams, beauty, etc. A fully restorative/circular infrastructure captures waste/stormwater and returns it to value within an industrially symbiotic system that fuels neighborhoods and industry alike. In return, the dependence on the Mississippi as the only source of water is reduced and the region becomes more resilient.

On another note, the Mississippi is not used for people transport in any meaningful fashion. Being a river/water city, there could be opportunities for interesting and fun methods of travel between areas on the river. These modes of travel could include zero emissions boats. This is one way that could open eyes to how we could approach developments on the river and make a harmonious relationship with it.

2.9. The initiative once headed by [St Paul] Mayor Coleman sought to have the river declared an "opportunity zone" In Illinois, all riverfront development has priority state funding through similar venues to Opportunity Zones. So, there are examples of that.

3. Energy, power, utilities

3.1. Power generation**:** Is there a way to harvest heat from electrical/power generation? We are heating dominant. Could the waste heat be somehow captured? Yes, absolutely. This is one key part of restorative infrastructure development where geothermal heat pumps, heat exchangers, etc. are a norm. This becomes more feasible once we begin to integrate energy and water infrastructure components with urban ag opportunities. In this scenario, zero emission hydrogen infrastructures become much more feasible as an option to heat buildings, for example. Fuel cells (the hydrogen equivalent to combustion engines) generate more than twice the amount of heat compared to electric engines. This heat can be used to generate more electricity, heat for urban ag, or any other local use that makes sense for each area. Low grade heat can serve to melt snow and ice (in pipes under streets and sidewalks), prolong growing season for urban agriculture, or heat buildings. Restorative development aims to integrate resources in ways that make this development economically feasible. The lingering problem is that even though the benefits of this are undisputable, anything new is always compared to the existing infrastructure (which we have invested in for decades). This is why systems accounting and full accounting for externalities is so important.

3.2. How viable is capture of kinetic energy? Also sounds/noise: There is a company in France that is turning city noise into energy. Kinetic energy in the urban realm is generally not economically feasible on its own but it surely could be when serving as a part of a larger energy integration. Kinetic energy has not been economically feasible. Most often, it is done in regions that celebrate innovation and even art. Kinetic energy has been implemented in various ways such as capturing energy from pedestrians walking or bicycling. Windmills are examples of how kinetic energy is turned into mechanical energy. Small scaled kinetic energy systems will probably never be economically feasible but as a part of an identity of a water city, it could have much greater value as art or statement of innovation or art (or both).

3.3. At Towerside, we are working on district energy using groundwater for heating and cooling. Hopefully, it will continue forward and allow us to rely on the nearly constant temperature of the

ground to reduce reliance on fossil fuels. In conventional accounting, the Towerside proposition is not feasible. In a restorative/circular economic context it is feasible.

3.4. Not specific to energy, but utilities in general: when [Hennepin County] has worked on opportunities to use road right of ways differently (e.g. green infrastructure, more distributed stormwater management systems) we've often run into issues related to the utilities that are buried in those right of ways. I have NO idea how all that works, but I wonder if thinking about utility distribution systems differently (if possible) could give us other opportunities in those areas that could help create multiple uses/benefits. Yes, this is so important and a critical part of restorative infrastructure development. It is an example of where the intersection between energy and water becomes real. In order to achieve municipal and state energy goals, the current infrastructure and energy mix must change. But it is not just the energy system that must change in isolation. (and this is very important). It must be changed to also allow for green and blue infrastructure as you suggest, and to allow for the broader socio-economic benefits to be possible. Today, energy, water, materials, etc. are being planned in isolation, which will direct massive investments straight into the silos (a restorative/circular barrier). Restorative development deals with these issues and aims to provide solutions that work for all and do not pose risk to the county OR the utility company.

Side note: In the near future and as a part of a larger circular economic strategy, the region will begin to think more in terms of 'material management' which will revolutionize how utilities are used and managed. Think water usage in ag and industry that will be local and closed-loop, less trucking/hauling of food and materials, etc. etc.

3.5. Tracing energy use down to the individual use - on the home scale: I'm curious how more incentives could be put forward to encourage property owners to use more efficient materials/appliances to ease the burden on the source. Many countries in the world offer incentives for appliances in the form of lower tax. US municipalities do not impose enough tax to begin with to give discounts so it is not as simple as it sounds. However, this is one key part of Smart City development and is likely to be mandated in the near future. We believe that Xcel Energy offers some incentives for energy efficient appliances in partnership with authorities. It would be interesting to know more about that.

3.6. Just like the incentive for using solar, is there an incentive given to builders and homeowners and businesses on this? Also capturing carbon and putting it back in the ground -- coming from use of fossil fuels. The city has introduced a social cost of carbon but it is not enforced, yet. The amount is $42/ton CO2 and, if enforced, would pose a great incentive for using zero emissions energy sources. However, for a perspective: the calculations used in this project expose the systems costs of energies – the lifecycle of energies. If CO2 from fossil fuels would be captured and sequestered, it could equal solar and wind in terms of overall carbon footprint, all depending on the infrastructure we build for the manufacturing of, use, and disposal of the components. We feel it is incredibly important to consider this while energy systems adapt to increased demands for zero emissions solutions.

3.7. Is there a way we can do "energy-sharing"? in other words, energy is disbursed at the point of need. A central energy source OR a system that recognizes that I'm not using the "energy" now so Bob can use it or anyone else who needs it. Do we have the technology? Yes, absolutely. Energy and other utilities can be measured and managed within localized systems in exactly the way you described. This is most efficient when done as a part of a larger smart-city strategy.

3.8. Recycling organic waste outside the City is a financial and environmental loss to our community. Agreed! Some cities/counties have done this only to realize it later. They gave a valuable

resource to a private sector firm and now this resource is not available for the larger benefits for at least 30 years. In fact it supports the old model where the definition of success is to 'get rid of waste'.

3.9. CenterPoint Energy will be doing a Green Hydrogen pilot project this year, with the goal of gaining operational experience and starting to determine the feasibility of blending it into the conventional natural gas stream. Thanks! This is great news for the region and we hope political leaders are paying attention. Hydrogen is the future and it is the only way we can truly achieve net-zero. Stock in hydrogen and fuel cell companies is soaring in tact with increased demand. Think about Hurricane Sandy and other hurricanes that hit the east coast in the last few years. The only energy systems that remained operational were fuel cell (hydrogen) systems. Iceland had a hydrogen fuel station for vehicles that was unmanned (that safe). It produced hydrogen from water onsite and supplied buses and other vehicles. This can absolutely be done in our region, not only for zero emission vehicles but also for buildings. The CenterPoint pilot could serve a great purpose in understanding the bigger value proposition of hydrogen. First as a part of the total energy mix…

3.10. We need to rebuild our soils within the community. Yes! The IUH can provide clean, nutrient rich compost that can be supplied to communities (hundreds of tons per year) as a part of a larger community resource strategy.

3.11. In addition to encouraging reuse of building materials more than we do, we need to consider reuse of existing buildings themselves (we're a throw-away society) and constructing new buildings for long-term benefit and lasting power rather than just short-term low cost. So true! In Europe, and as part of the EU's commitment to the circular economy, developers are designing buildings where all parts can be used in other ways when the building has completed its life cycle. The driver for this is upcoming 'tipping fees/costs' to construction companies for construction waste. In restorative/circular terms, this represents an incredible opportunity for innovation. The Twin Cities region has no shortage of innovative people. What we need is opportunities for pilots and implementation. And let's not forget that there is more capital available for sustainability projects today than there are qualified projects. This enhances the opportunity and makes it more achievable. We would see this as a critical part of restorative development.

3.12. Also moving towards reusable and sustainable materials. Once we begin the restorative journey and the benefits of restorative development are being realized, we also begin to ask ourselves "why on earth do we have these waste materials in our system". This is also why many of the big brands are interested in restorative and circular development. They don't want their brands being the last ones in the landfills.

3.13. Normalizing and requiring use of sustainable materials and energy efficient materials & design. developers treat this as an option and so opt against it to decrease costs. Developers operate on thin margins. They also operate in a high-risk environment, hence their resistance to anything new. For developers to be able to make this change, they must be protected. Restorative development deals with this dilemma by providing values in other areas that derisk the 'new' value proposition. Example: provide for green and blue infrastructure that increases the attractiveness of the development, property values, and occupancy rates; offers amenities, no need for stormwater tanks and boilers (because the infrastructure provides it), and even access to lower interest capital because of the high environmental and social ROI. (just few examples)

It is an opportunity to learn how to protect developers while they learn how to use this resource. This is another example where local businesses and experts can fill this role.

3.14. Biochar utilizes wood waste, creates a valuable soil amendment, sequesters carbon for 3,000 years. The waste heat is 5,000,000 BTU an hour for even very small scale production available for heat exchange. Exactly, biochar must be a natural part of the habitat, preferably in integration with other biological and technical processes.

3.15. Perhaps that should change or incentivized to force the change…

3.16. The way things are made or packaged and materials are blended makes reuse and recycling very challenging. It's very important to address at the source. Yes, packaging seems omnipresent! What about all the packaging materials with the exponential increase in home deliveries. Absolutely. Packaging is at the heart of many circular economy projects in the world today. In this project, packaging materials represent an incredible opportunity to process this 'waste/material' locally and within the circular economic system introduced in these workshops where businesses and jobs are created within neighborhoods. The IUH's material recovery unit would provide these materials to local businesses to convert to value. (that is there the jobs and bigger benefits are realized)

3.17. Can HERC be re-envisioned to create cleaner energy? How might we create incentives toward recycling/diverting waste sent to HERC? In a restorative/circular system, there is no waste. In the future, there will be no incinerators. This is because all 'waste' will be treated as 'materials'. These materials will be captured locally and converted to value locally and within an industrially symbiotic system. Over time, materials that cannot be reused will be faded out and banned. (this is already happening in Europe, New York, and other places)

3.18. What is the biggest source of waste - households or business or others in MPLS? *Organic waste/yard waste.* All the big companies are panicking about packaging these days. We meet them regularly in the circular economy forums. They are trying hard to create packaging that is not harmful to the environment but it remains a challenge to scale it. The bigger topic I would suggest is how our current and planned infrastructure handles (will manage) waste now and in the future. If we have infrastructure and a system that sees waste as materials, we build infrastructures that can manage these important materials onsite. (vs. continuing an infrastructure that 'gets rid of waste').

3.19. I am glad they are panicking! But this has to be at least two paths to solve it - at source (will take time) and treatment and usage of waste (your point). Yes, exactly. And this represents another opportunity for eco-innovation. When we build these infrastructures and symbiotic systems, it will attract industries that now will have access to vital resources ..and an infrastructure that takes their waste and converts it to value, that they, in return, would be happy to purchase back.

3.20. We need to see high bandwidth access to the Internet as a utility, regulated and made available to all. That access is now too central to our economy and wellbeing to be left to the marketplace.

3.21. And broadband access is the new redlining

3.22. What about Minnesota following California and requiring solar on every new house being built, with incentives to reduce the increased first cost? I live in a new solar-powered house with no fossil fuels burned in the house and it is very doable.

3.23. (Tom Fisher) We researched 54 digital, community engagement platforms for use during COVID-19, assessing the platforms based on cost, ease of use, etc. I'd be happy to make that research available to anyone interested, since I think remote engagement will continue to some extent after the pandemic.

4. Food

4.1. Scientists have documented the fact that most humans have a certain amount of plastic in their system today. They do not know the long term impact to our bodies. Authentic plant seeds is an issue as "big food" companies have genetically-engineered seeds to produce one year of crop only. ..and this is so important in so many ways, isn't it?! When the wind blows genetically-engineered, monocrop seeds over to your natural crop, it will not only ruin your crop but your soil for years to come. This is a geographical and political issue that is not easy to deal with. However, like with most things in restorative development, we need to begin somewhere. We strongly believe that success in the urban ag space will eventually influence the larger agricultural landscape in a positive way. We are fortunate to have some of the world's best experts in this area, probably within our group here today. There is great knowledge in our region that could provide tremendous value in developing in the right/restorative direction.

4.2. Teaching people about where their food actually comes from and how it is produced is a method by which we can encourage food production (local) in a way that is significantly more healthy for us and for the environment. Agreed! As a part of this restorative development program, this teaching could take place in schools and onsite, in urban farms, the IUH, and any other place in the urban habitat. Maybe also include the importance of 'access' to food and where in the city food comes from, highlighting how important it is to be able to grow healthy food close to home as part of food security. Your thoughts on this would be so welcomed in future stages of this project.

4.3. Edible landscaping at parks YESS!

4.4. Need to address food insecurity… Yes, yes, yes! This project exposed the true cost of food insecurity and it is so expensive that almost any investment would have such a return that it would put any Wall Street hedge fund manager to shame. This is not meant to be a funny statement. It is true! This project deals with food insecurity by redirecting resources in ways that food will not only be more available but that people will have the means to access it. (education, living wages, etc etc)

4.5. Better ways to store food seems like a huge component, especially in Mn. Yes, the pandemic exposed the threat to our food security. Localized production (urban ag) could provide a much higher level of resilience, for example.

4.6. People are disconnected from where their food comes from, and that could go a long way to recognizing impacts from our current food system. Right!

4.7. Food also has a very strong link to culture and identity. So true!

4.8. Public boulevards offer a chance for food production. With some coordination, the growing process could be shared. Absolutely!

4.9. Minimize food "waste". YES! Did you catch it in the session that if we would capture all our good waste, there would be enough food to fill in the food gap? This is why integration is so critical.

4.10. Persons are also disconnected from their bodies and thus how fund interacts with them. Is it fair to say that we could become more connected with our minds and bodies if we live in healthy neighborhoods where 1) habitat is visible (and we can smell it), safely accessible, and have time to enjoy it? We would say that this is one outcome from successful restorative development.

4.11. Most of these agri issues can be minimized with a plant based diet rather than animal. While this project does not judge whether people like meat or not, your statement is so true.

4.12. Movement started in the 70's and been slow to integrate.

4.13. Food insecurity + cheap bad food = health issues . This is so important to address in the post pandemic era. Agreed. The cost of this is tremendous but it is just one of those externalities that are currently not calculated into the price of things. However, it is figured into the calculations in the restorative model.

4.14. Quality of life (income, stress, time, access, knowledge/culture of cooking) impact food choices. You made the perfect restorative statement. We owe you a drink! :)

4.15. A large initiative in Europe seeks to eliminate or minimize "food shelves". i.e. teach a man/woman to fish instead of giving them a fish...I understand the emergency need for food shelves but reject them as a long-term solution to food insecurity. We agree with you wholeheartedly. This is the goal of this project. Like with anything else of this sort, we become complacent where budgets to food shelves become the norm while suggestions for investments in a solution that 'teach people how to fish' are deemed unfeasible. In fact, we are investing in the problem, sealing the problem in place. This project aims to redirect investments (carefully) from going to the problem and toward the solution. We're on the same page!

4.16. Addressing immediate food insecurity needs is necessary, but from a restorative development approach I think investing in communities, particularly communities of color which have lower incomes, educational attainments etc, makes sense when we think about job shortages related to green jobs, etc. Exactly, this is where we are going to see the biggest return on investment. But we would not be surprised to see low-income African-American communities (and indigenous peoples)

4.17. The Milan Pact. Yes! All the Milan pact has that we do not is the culture of doing it. Our need is far greater. It takes incredibly strong leadership and support to leaders to make bold decisions. This restorative development helps bring the business case for these bold decisions.

4.18. Also connected to not being connected to where our food comes from. We don't pay the real costs of food including the food distribution system https://goodfoodpurchasing.org/ Yes! ..and which represents an opportunity and a reason to change the system. We see all the ingredients in place. It's just a matter of a decision.

4.19. There's an organization called Imperfect Foods that organizes, sells, and delivers food with small blemishes, that are too big/small for distributor requirements, or excess quantities. And Walmart has begun to sell "imperfect" vegetables in certain areas as an experiment. Thanks for sharing – so important!

4.20. Food insecurity is also a political issue. Targeted marketing in low income communities could be characterized as genocide. In restorative terms, you might call it 'suicide by municipality". This is one area that went completely unmeasured for decades. The long-term socio-economic consequences were not a part of the decision-making process back then. The current guard is left with this mess and we hope this project can help clarify the externalities and make the business case for change.

4.21. Some universities are also leveraging these imperfect foods to address food insecurity and encouraging healthy food habits.

5. Integrated Utility Hub (IUH)

5.1. Is the IUH intended to be city specific or regional …how local? Would the IUH serve the whole city? Region? Neighborhood? In this project, it was not site-specific. The IUH concept is designed to provide regional resiliency solutions where a network of IUHs supports a semi-decentralized grid system that includes utilities integrated with the habitat. It can be scaled from a single IUH to a regional scale.

5.2. Will you (can you) quantify the benefits of the Hub to a developer, specifically cost savings, etc. With the metrics and data you have collected is there a 'pro forma' business case or ROI development possible overall, and for individual key stakeholder groups? In this phase of the project, the technical feasibility of the IUH was assessed. Phase 2 of this project will go into the details of this though. However, we have calculated the economic ripple effect of an IUH where the output is used within the community it serves and it is much greater than if we were trying to make a profit from it for private ownership. However, I sense you may be asking with the intent to know whether other unit of resource management or production could be included, and the answer is absolutely yes. There is plenty of room for private sector involvement, we are just keeping certain aspects in check to secure benefits to the public.

5.3. GAF, Northern Metals and Duffy Paper all get my senses going (smell). Will that be an issue for the Integrated Hub? No! While the IUH will process smelly stuff (organic waste and compost), it will all be done indoors and under carefully designed negative pressure systems. There are plenty of examples for this being done in metropolitan areas. Canadian city, Toronto I think, is putting in a similar type system right down-town, Seoul, the capital of S-Korea has one, etc. etc. Europe has over 8000 biodigesters in use.

5.4. What are the metrics, benchmarks, specific policies, and precedent project examples that will address embedded racism, deliver community wealth-building objectives, and the power-shift needed to ultimately demonstrate Just City outcomes? Thank you for your question, which we recognize to be important. We conducted multiple training sessions that some stakeholders took with us. We will do much more of that in future phases of the project and also in more depth as will be required as people gain more understanding. We hope that the answers above provide an idea for how this project deals with 'exclusion' and makes the business case for inclusion.

5.5. Where has an IUH project been done in other cities or other countries. How much does it cost? Is it a private or public investment...or both? The IUH is a new concept that has not been built in this form before. Financial costs and feasibility in the IUH itself will be established in the next phase of this project. The financing and governance structure will also be detailed in the next phase.

5.6. A key question I have from this framework and today's session is about who benefits from the current systems and who will benefit from the proposed changes to the system - along with identifying who is not benefitting as well as who is harmed. This is the benefit of the EcoDistricts Protocol process that sets these kinds of big, ambitious, and necessary goals but then quickly gets to laying out the workplan and milestones to get there. That change will really start with cataloging all the players across these systems who are benefiting, who are not benefiting, and detailing the ways in which they can be influenced to make changes that move us towards the desired goals. Maybe this is a task for a future workshop or portion of the feasibility, but that process will get us closer to implementation and equity working hand in hand. Sure, in many ways, this project will achieve what EcoDistricts are about as well. However, the two are not in a

competition. This project provides metrics, tools, and infrastructure that are needed to achieve EcoDistrict goals. This project aims for net-positive performance and makes sure actions and investments are directed for net-positive outcomes, so if that is where EcoDistricts is going, then they can work together. Same with Living Communities, and others.

5.7. Answers, responses, clarifications:

- We have designed the IUH in multiple cities but none have entered the building stage. The investment has not been determined but it will go through that in the next phase of the feasibility study (phase2).
- Stakeholder alignment and roadmapping will be tackled in Workshop #3, and we'll make sure to answer some of the other questions in Workshop #2 as we talk about restorative communities.
- The IUH compost operations would be completely enclosed under roof and specific measures will be taken to alleviate any odors. We hope people will smell fresh fish tacos and veggie burgers though…

5.8. Is there a benefit to introducing the IUH in a retro-fit context (within existing built environment) versus as a closed-loop utility system in a new development site or both for comparison? Yes, absolutely. In a fully developed district in San Francisco, the city found two acres which we introduced a multi-story IUH for.

5.9. Are people with the skills to manage the UIH available now or is specific training needed? Some skills are existing but high tech jobs within the IUH will originally be manned by trained engineers. However, we will immediately begin training local people, from affordable housing programs, etc. to fill in these jobs as soon as they are ready. We also want to connect with school districts to show them a high-tech/bio environment for encouragement and inspiration, and to non-profit organizations to invite people from rehabilitation programs, for example.

5.10. It is hard to not start with acknowledging and emphasizing the people and the inequities of the city to shape the state of the city today. The "conventional" score is likely an average and that certain zip codes likely have higher scores and lower scores. Which should inform solutions as well. Yes, that is correct. This is the score that comes out at the highest level in the metrics hierarchy. Once you click on that score, you begin to see the details. It's there where you see what is hidden in the details and where the true picture lies. In Workshop #2, we will contrast the average score with the reality and lived experience in some neighborhoods that would score at the "exploitive" level.

5.11. How would waste be transported to the IUH? *Response:* We're hoping that at least the last mile will be underground to eliminate disruption to the development/residents.

6. Resource management, Yorth model

6.1. How does the Yorth model ensure the "accuracy" of the scoring? Scoring can be subjective and therefore requires attention to who is scoring. Sure, the data is entered into a software that uses algorithms to calculate scores and identify synergies and systems accounting. This way it does not matter who enters the data, you will always get the same score. In that sense it is 'objective'.

6.2. Curious to know how the city is filtering in this data vs their 2040 goals and plans and prioritizing? One intent with these metrics is to help make the 2040 goals more measurable. For

example: One 2040 goal states that "In 2040, all Minneapolis residents will have access to employment, retail services, healthy food, parks, and other daily needs via walking, biking, and public transit." We recognize that there is a waste difference between being able to walk or bike to these basic needs vs. taking public transit. (many cannot afford public transit and it can take more time than low-income people have, and therefore it would not be an acceptable 'solution' plus it would counter against other 2040 goals). These metrics and approach provide the means to assess for, report, and guide decisions and investments to the best possible outcome. One big obstacle that city planners have to deal with is 'lagging indicators'. They won't really know the outcomes until after things are built. These metrics and approach provide the means to better foresee and manage the process toward the best possible outcome.

6.3. **How does operation and maintenance fit into the restorative development model?** It's a huge concern of cities and others and a barrier to adoption of new shared systems approach. Yes, the restorative economics model (the metrics used in this project) include true cost and systems accounting. It qualifies and quantifies performance. Operations and maintenance are critical parts of a system, whether it is an infrastructure component or a community. By design, restorative development seeks to maintain assets at their highest performance. This cannot be done without proper maintenance. Perhaps the key difference is that in this project/metrics, the business case for this is clear. This is because the costs and externalities are identified and accounted for.

6.4. **Is RD only managing resources and not generating new resources?** No, not at all. People may have different ideas for what a resource is. For this project, a resource is categorized in various ways: Example 1, physical resources: including energy and water sources, mineral sources, reclaimed waste/materials, etc.; and Example 2, non-physical resources: including human resources that could include anything from innovation to community spirit. In this project, all resources are assets.

7. Economy, wages; role of private, public sectors

7.1. Is restorative wage determined based on household of 4 or per individual? *Response:* Clarification on the $38/hr restorative wages: It is per average household, which is not necessarily a household of 4

7.2. The big question is what kinds of jobs/industries will pay the restorative wages? And can we have systems to support double income per households to get to this with county providing care services for childcare etc

7.3. (Tom Fisher)I just co-authored an article on a new way to think about the economy based on the idea of a second, community based currency that extends people's purchasing power and that absorbs the excess capacity in the marketplace. Here is a link to the article: https://www.intechopen.com/online-first/from-money-centered-to-people-and-planet-centered-ledger-economics-leveraging-the-hidden-wealth-of-u

7.4. A specific thing we can do in Minnesota is to restructure the Social Impact Bond program in the state so that it actually works to funnel private investment into underserved communities. Here is a good analysis of what needs to change in the Minnesota Pay for Performance law: www.propelnonprofits.org/blog/what-has-stalled-implementation-of-the-minnesota-pay-for-performance-bond-pilot/

7.5. Socio- Eco Adoption of neighborhoods by private sector…

7.6. I was struck by the NYT Daily Podcast yesterday on new US Climate Change Policy - and it made me think of the RDP; they started the system wide policy conversation by illustrating a day in the life of the new climate economy - I think we need that narrative for RDP.

7.7. Industry: Drives Innovation, Responsive to customer interests/demands

7.8. We might move to the top income tax rate that existed during the boom years of the Eisenhower administration, which was 91%. A data point from yesterday: Jeff Bezos could give every Amazon employee a $100,000 raise and he would still have many billions left.

7.9. Government: Flexibility in how the industry can meet government rules and regulations

7.10. Government needs to provide the bridge (financial) for industry to make the change. You cannot expect a private business to fund the change we are looking to make.

7.11. I think government needs to better understand what our ask of the private sector should be

7.12. I think we (govt.) has a role in quantifying equity/value that is lost, and asking/creating the expectation that those externalities be internalized.

7.13. Can you please remind us what infrastructure is lacking that is limiting breakthrough development to take place. *Response:* This infrastructure could include infrastructure for material management, where waste is converted to value

7.14. How do you address the gaps in existing infrastructure because that is not going away? *Response:* Gaps in existing infrastructure will have to be filled over time, and as infrastructure becomes increasingly more modular.

7.15. The elephant in the room regarding poor educational outcomes in some communities is this high level of Adverse Childhood Experiences (ACES). While Minnesota overall has low ACES rate nationally, the rate is very high in some Minnesota communities. I have argued for the need of public boarding schools that would enable children in troubled or unstably housed families have the stability, safety, and security to focus on school work. We could pay for these schools through the improved outcomes of the students benefiting from them, maybe by creating an educational version of TIF. *Response:* Tom Fisher, yes to the elephant in the room. We would very much welcome discussing this with you during the next phases of the program. This must be included in the roadmap. We know that an investment in this field yields a ten fold ROI. Educational version of TIF (tax increment financing) is absolutely doable.

7.16. (Tom Fisher) I am giving a talk today at noon as part of the Great Northern Festival on the future of infrastructure with the coming of autonomous vehicles and multi-modal transportation. This will dramatically reduce parking requirements, for example.

7.17. To the point regarding the RDP public-private partnership research needs another category besides government, industry, and developers - and that's the financial sector. Developers are primarily a rear-view window industry because of what the current financial and banking sector demands of them. *Follow on:* That's so true. What if we reverse this some what by calculating the social impact ROI of building balanced infrastructure and then a way of sharing that back with the industry. Perhaps a community ownership where possible for long term sustainability, Win Win for everyone. *Response:* Yes agreed. We left insurance and finance sectors out today due to time constraints. Thanks for pointing it out!