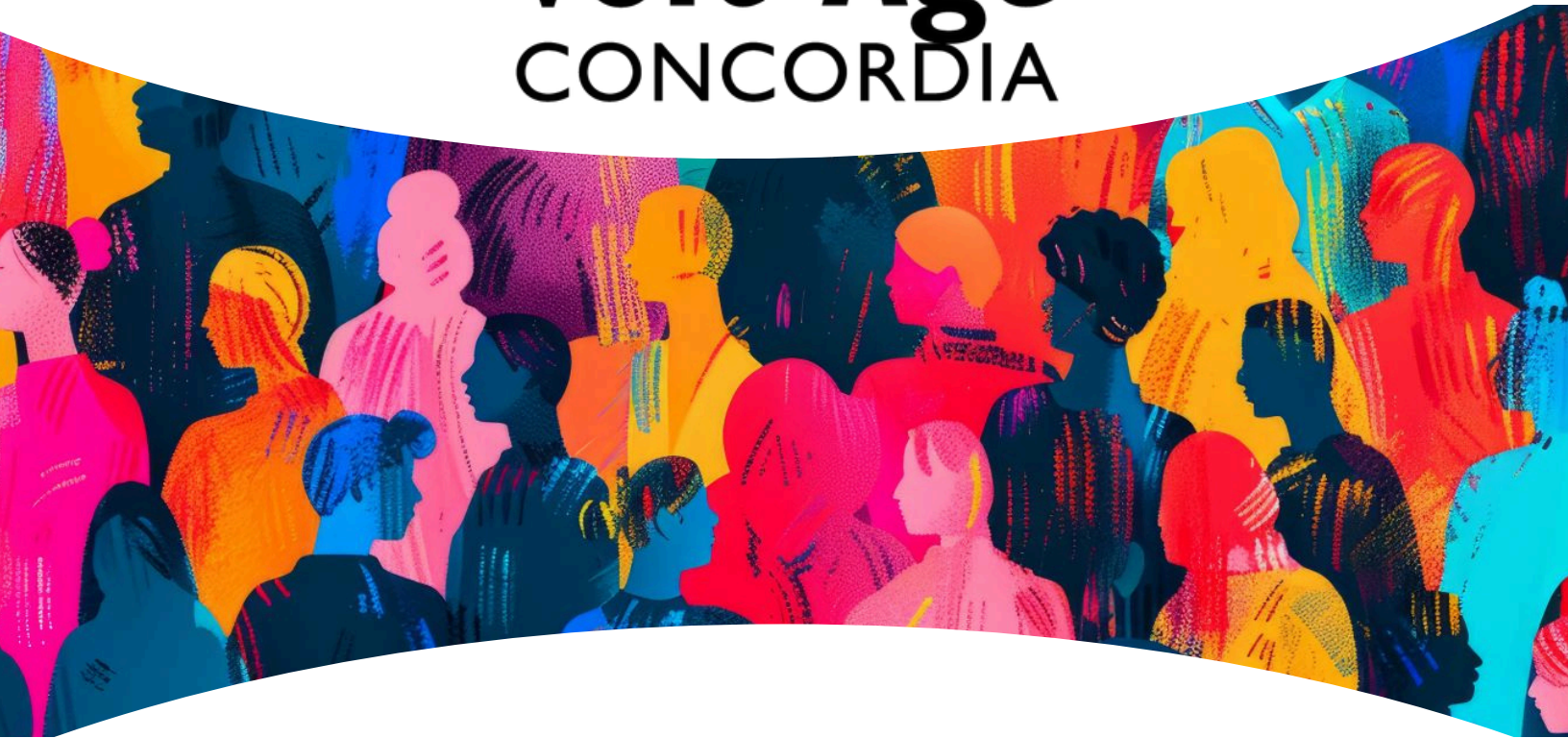


Volt-Age

CONCORDIA



EQUITY, DIVERSITY AND INCLUSION

ACTION PLAN

Concordia University
2023-2030

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1. Development of the EDI Action Plan

1.1 CFREF Vision and Key Objectives

Volt-Age addresses technological and social challenges associated with the creation of decarbonized, climate resilient and thriving, and sustainable communities. This can be achieved and sustained only through a two-pronged approach: 1) R&D in technologies, infrastructure, and data frameworks; 2) innovative policy and practical mechanisms that make citizens and communities active shapers of Volt-Age’s values, objectives, and priorities. Volt-Age will integrate these into the creation of knowledge from beginning to end: who asks the questions (diversity of experiences and narratives in research teams), how questions are framed (co-creation as an active form of social acceptability theory, emphasizing that largescale projects require community acceptance to succeed), the way research is done (make-up of research teams and stakeholder partnerships), and ultimately, the ways in which new technologies are deployed and used (co-ownership of impact). Our research aims to empirically validate that diversity and co-creation directly contribute to advancements in hard sciences and technology development, reinforcing the effectiveness of these methodologies in achieving substantial scientific and technological outcomes. We also seek the limits of cocreation in fundamental research, recognizing that collaborative approaches may not always be effective in every scientific context.

The EDI Action Plan will be built on four pillars:

- 1) ongoing identification and tracking of barriers for underrepresented groups participating in, and benefitting from, decarbonization research
- 2) governance/organization strategy, including careful analysis all policies, plans, programs, and processes, based on genuine EDI (equity, diversity, inclusion, and Indigeneity) values and principles to mitigate and disrupt bias against underrepresented groups
- 3) socially just and broadly inclusive research and innovation
- 4) capacity building for EDI in all disciplines, especially “hard” science, and technology.

Volt-Age's EDI Action Plan builds on known best practices but will be a living document that is continuously improved to incorporate even better practices as we discover them.

1.2 Commitment to Addressing Systemic Barriers

Our initiative addresses systemic barriers in two major areas. The first is in the approach to conducting research that has been predominant for decades (i.e., a linear approach to questions, design, and mobilization). There is a dearth of social reflection connected to technological research and a lack of attention paid to the strengths and needs of diverse stakeholder populations within our research group and within end-user populations. Thus, Volt-Age will deliberately identify these diverse perspectives and leverage them to add value to research questions and methods.

The second is where and how knowledge is produced and used. In “hard” technology research, integrating end-users (e.g., industry) into the research process improves the relevance of the outputs and the speed and effectiveness of technology transfer (Cai et al. 2022). A similar point is true of research that affects society, which benefits from participatory processes that draw on the diverse knowledge and ways of knowing of relevant stakeholders. Here we make an important distinction about Volt-Age stakeholders: (1) how this knowledge affects the underrepresented groups identified by CFREF and (2) how it will affect Canadians at large – those who benefit and those that do not. Both are critically important to engage, not only to serve equity goals but as co-creators to ensure the research outputs are relevant, valuable, and usable, with no unwanted negative impacts. Here, the process will be more non-linear and iterative than usual in technological development. Volt-Age uses a transformative approach, based in part but not exclusively on Living Labs, where analyzing the complex underlying processes, understanding the conflicting interests in community development projects, and contributing to solutions will be achieved with and for different stakeholders. In short, we will use Volt-Age as a scaffold to investigate systemic barriers with the intent of eliminating them, by considering them also as subjects of research.

1.3 Preventing Performativity and Tokenism

“Anti-bias training,” “EDI work,” or “diversity work” can inadvertently result in the reinforcement of tokenistic misunderstanding of diversity or reproduce unwanted power relations (Möller et al. 2023, Fines-Neuschild & Tajmel 2024). Tokenism can set unrealistic performance goals and negative social pressures for people who are tokenized, reducing their achievements and thus reinforcing stereotypes without leading to structural change (Kanter 1977). To counteract this we will: 1) carefully consider the power and influence accorded to underrepresented perspectives as well as the use of categories and percentages of representation (governance); 2) provide performativity training for all Volt-Age members, including on its roots across cultures (capacity building); and 3) make conscious and careful use of role models, to lower the risk of tokenism and set realistic performance goals (EDI monitoring).

Examples of concrete measures to avoid performativity are:

- Instead of asking for separate EDI sections in research proposals (which frequently suffer from rote, insincere, text) we will emphasize appropriate research design through continuous training and collaboration.
- We will evaluate research proposals according to EDI criteria embedded in all steps of the research process and indicated in calls for proposals, including peer review, governance, and monitoring, setting criteria also for documentation for these processes and requiring commitment to EDI from evaluation committees.
- We will hire *EDI in STEM* research advisors to identify documented EDI issues of the Volt-Age fields and work collaboratively with researchers to design targeted measures to overcome them.
- We will require interdisciplinary collaboration to leverage knowledge from social studies for Natural Science and Engineering (NSE) research and vice versa.
- We will ensure that training and mentorship programs are co-created between appropriate groups and experts to tailor to the needs of intended audiences.

1.4 Equitable Research Excellence

Technology is often seen as “outside” or “above” societal questions (e.g., Oelschlager 1979). This can lead to assumptions that: 1) technology is neutral; 2) it must “sell” (thus non-commercialization processes are obstacles); and 3) technology alone fixes societal problems. Regarding electrification, there are major opportunities to advance social and environmental justice by combining technology with innovations in social and governance systems (Stephens 2021). Historically, resource extraction and energy transition projects have led to environmental degradation and pollution that disproportionately harms Indigenous communities (Westman & Joly 2019; Pineault 2018), lower-income communities, racialized minorities, and the elderly, with gendered and intersectional implications (Nakamura 2014; Kojola 2019) often underestimated. There have been recent efforts towards more ethical practices by public and private decision-makers; e.g., the promise of sustainable employment for racialized communities (Zarsky & Stanley 2013). By working with partner communities directly and iteratively throughout the innovation process, we will minimize bias, identify and address harmful hidden externalities of technologies (e.g., environmental toxins) early on, and avoid propagating existing power imbalances in technology development; e.g., by taking seriously issues of social acceptability and retraining (Carley and Konisky 2020). Research excellence will be redefined as inclusive of alternative forms of knowledge and engaging communities for more impactful and equitable research, which we aim to accomplish by engaging all researchers funded through Volt-Age in implementing this EDI Action Plan.

1.5 Equity, Diversity and Inclusion Expertise

The Volt-Age EDI Action Plan is deeply informed by extensive institutional-level expertise at Concordia University and its partner institutions. Relevant units and programs include but are not limited to the Equity Office (Concordia), Office of Indigenous Directions (Concordia), the Indigenous Directions Action Plan (Concordia), the Black Perspectives Office (Concordia), Q Centre's queer mentoring program (U Calgary), and anti-Black racism actions grounded in student advocacy (TMU (Toronto Metropolitan University) - with an EDI tool to be enhanced by March 2025 for collecting and analyzing qualitative inclusion data, Dimensions Program (Charter member and pilot University) and Faculty Dimension Chairs, student and staff self-id surveys, Ted Rogers School of Management EDIA Report, Office of the Vice-President, Equity Community and Inclusion (TMU – first in Canada), Truth and Reconciliation Report Programs: Standing Strong (Mash Koh Wee Kah Pooh Win) Task Force Report, Black graduation, all of which are actively involved in co-creating Volt-Age. Co-creation, including through our Impact Projects and Living Labs, will engage communities and stakeholders continuously and iteratively, ensuring that the EDI Action Plan remains an evergreen document, evolving with the needs and inputs of the communities involved. Volt-Age also benefits from the deep expertise and extensive experience of its researchers in community-based research, co-creation methodologies, and research on EDI in STEM.

1.6 Strategies to Ensure Strong EDI Leadership and Accountability

These are the strategies that will be used to ensure strong EDI leadership and accountability at levels within the initiative:

1. An EDI committee will set policy and goals, provide resources, monitor progress, and issue recommendations.
2. Our partnership with Indigenous Clean Energy (ICE), a leader in the energy sector, will leverage its expertise to ensure that Indigenous perspectives and knowledge are integrated.
3. Leaders will actively promote inclusive policies; e.g., by providing (and themselves receiving) regular EDI training (including GBA+/SGBA+), providing resources for the entire team (including HQP), and monitoring progress (see Action Items and associated budget line items).
4. A performance measurement system will employ quantitative and qualitative metrics into routine evaluation and refinement to programming.
5. We will leverage existing institutional EDI resources/supports, partnerships, and monitoring.

2. Intersectionality

We have drawn on the work of Black feminist scholar Kimberlé Crenshaw (1989) and on intersectional analytical methodology (Winker & Degele 2011). D'Ignazio & Klein (2020) explain how complex and intersecting power systems are configured across legal, institutional, cultural, and interpersonal domains. These are significant in the research and innovation domain, as they can shape the knowledge products and the political engagements that might either uphold or contest the status quo (Collins 2019).

By explicitly considering intersectionality in both research processes and end-user impacts, Volt-Age will identify EDI biases and barriers (both formal and informal) in a way that is highly nuanced. In turn this will make them more amenable to intervention: reduction or avoidance altogether. Unfortunately, there are few comprehensive guidelines on how to proceed in practice. Here, Volt-Age intends to “move the needle” with deliberate and innovative investigation – we will conduct intersectional comparative data analysis (recognizing limits of low representation and including both qualitative and quantitative analyses) and develop an intersectional analytic toolkit. In this, the Living Labs will be core resources. Further, we will collaborate with institutional supports, institutional and community partners, and experts, to build on existing frameworks, such as SGBA+ frameworks, frameworks for responsible research and innovation, and the UN’s “Intersectionality Resource Guide and Toolkit” (UN Women & UNPRPD 2021).

2.1 Racialized Individuals

Racialized individuals face historical and present-day marginalization. This section outlines the systemic barriers that exist for racialized individuals in the research disciplines of the initiative and their impacts on the individuals and the research ecosystem.

Overview. In the context of energy transition, it is crucial to understand racialization – both as an individual experience and as a sociopolitical phenomenon: 1) the lack of representation in professional, educational, and otherwise relevant industrial units; 2) the downstream impacts of energy transition on racialized communities; and 3) the exploitation of racialized workers in energy transition projects. Racialization refers to a broad heterogeneity of experiences and systems; it is determined differently depending on ethnicity, origin, gender, class, and immigrant status (Adebayo 2024). Further, it is not simply participation that is important, but factors such as seniority, professional status, effective power, and job security.

Clean energy. Some groups are significantly underrepresented in the clean energy sector, e.g.: visible minorities (~13% of the clean energy workforce, vs. 21% in the overall Canadian workforce in 2016), and women (<26% vs. 48%; EHRC 2019). Indigenous workers are slightly

more represented (~6%, vs. 4% national), reinforcing that “underrepresented” is not a blanket term, but needs detailed unpacking.

Senior and professional positions. There are many barriers for underrepresented professionals in positions of power in STEM environments and government. First, children are racialized in early childhood education, limiting their initial career opportunities (London et al. 2021). In the later career pipeline, there are hiring inequities (Phillips et al. 2022), inhospitable work environments (Cech 2022), and precarity-inducing immigration policies (Liu 2019).

Implications for energy transition. Canadian extraction and/or energy transition projects have historically disproportionately affected Indigenous communities by destroying the environment that provides sustenance, which may in turn lead to disastrous health impacts (Westman & Joly 2019; Pineault 2018). International Canadian mining projects create similar destruction and endanger nearby communities (Giglio 2021; Kaunda 2020). Recently, mining companies have developed more ‘ethical’ practices; e.g., sustainable employment for racialized communities (Zarsky & Stanley 2013), and in extraction projects (Willow 2020). However, long-term sustainability suffers if energy markets change (Hall & Pryce 2023), and environmental destruction looms (Westman & Joly 2019; Pineault 2018). Wan (2019, p. 251) describes these “never-ending exploitation” extractive feedback loops, and Nakamura (2014) notes the ways that race, gender, and class intersect as they relate to exploitation in industrial economies. Overall, having more racialized people in positions of power and decision-making may mitigate the downstream effects of the energy transition on their communities (Costanza-Chock, 2020), though it is unclear how much representation is enough and who decides.

Implications for RTI participation. Historical marginalization and systemic barriers limit the participation of underrepresented individuals in the research ecosystem. For instance, racialized individuals are often the sole Persons of Color in their department or even entire institution, leading to minority stress (Henry & Tator 2012; Henry et al. 2017). They may feel tokenized, especially within EDI committees and activities. In intersectional discrimination, racialized women are disproportionately affected; e.g., earning less than racialized men in STEM (Andrews-Clark 2023). Non-native English-speaking students (Kubota et al. 2023) experience intersectional discrimination by being seen as “linguistically deficient”, while also experiencing racism. Racial microaggressions toward people of color are commonplace in academia (Sue et al. 2007).

2.2 African, Caribbean and Black Individuals

African, Caribbean, and Black individuals face historical and present-day marginalization tied to anti-Black racism and are particularly underrepresented in Canada’s research ecosystem. This section outlines the specific barriers that exist for African, Caribbean and Black individuals in the research disciplines of the initiative and the resulting impacts on the individuals and the research ecosystem.

Overview. Common denominators are histories of colonization and enslavement, within general anti-Black racism. Recent immigrants to Canada from Africa may have different experiences than those whose ancestors were enslaved (Adebayo 2023). These differential experiences stem from the impact of structural racism on childhood education (Mason et al. 2022) and the immigration experience itself (Liu 2019; Adebayo 2023).

Volt-Age-specific issues. Barriers exist in both professional and civic life. Structural anti-Black racism carries barriers for positions of authority, environmental consumer participation, and the right to community consultation. A “glass ceiling” limits the success of young Black people in both STEM (London et al. 2021) and positions of power (Stephens 2020). In addition, social imagery of environmentalism as “white, heterosexual, and classed” inhibits the engagement of Black, Caribbean, and African diasporic communities in the environmental struggle (Curnow & Helferty 2018; Sovacool et al. 2019), limiting co-creation’s potential for preventing harms from environmental toxicity (Kaunda 2020; Kang et al. 2013). Further, Black, and Caribbean/African diasporic communities tend to be centered in the underserved civic or municipal areas where energy transition project are often situated (Reynolds 2016), in part because of NIMBYism (Dalzero 2021).

2.3 Indigenous Peoples

Indigenous Peoples (First Nations, Inuit and Métis peoples) face historical and present-day marginalization, and Indigenous researchers are particularly underrepresented in Canada’s research ecosystem. This section outlines the systemic barriers that exist in the research disciplines of the initiative and their impacts on the individuals and the research ecosystem.

Overview. Analysis of the long history of energy extraction in Canada shows that government policy and corporate land exploitation often work together to disregard Indigenous treaties, traditional governance systems and respect for Indigenous life and livelihoods (Samson 2014; Parson & Ray 2018). Thus, the most crucial EDI principle is to conduct meaningful consultation (Bankes 2020; Eisenberg 2020; SCC 1997), including governmental respect for Indigenous refusal (Wood & Rossiter 2016).

Volt-Age and RTI-specific issues. Communities must be consulted for (at least) the establishment of solar, hydro, geothermal, and wind energy facilities, mineral extraction, and battery factory construction (Hoicka et al. 2021).

Intersectionality. Indigenous women experience multiple intersectional barriers in accessing STEM fields. While Indigenous individuals are underrepresented across all STEM fields (Prema & Dhand 2019), Indigenous women are less likely than Indigenous men to have studied engineering (Arriagada 2021). Furthermore, STEM curricula do not discuss Indigenous ways of knowing, another factor that inhibits Indigenous participation (Walton et al. 2020).

2.4 Persons with Disabilities/Disabled People

Persons with disabilities/disabled people face historical and present-day marginalization tied to endemic ableism and disablism both in the research pipeline and in the academic job market, leading to significant underrepresentation in Canada's research ecosystem. This section outlines the systemic barriers that exist for persons with disabilities/disabled people in the research disciplines of the initiative and their impacts on the individuals and the research ecosystem.

Overview. We follow the definition of disability as a spectrum of different socio-political experiences and intersections (Erevelles 2011), necessitating a diversity of approaches to adequately overcome systemic barriers.

Volt-Age and RTI-specific issues. Disability intersects with energy transition in two crucial ways: (1) representation and participation of disabled people in STEM and decision-making positions (Dolmage 2017; Russell 1998); and (2) the dynamics of debilitation (Chen 2023; Erevelles 2011).

Representation. Individuals with disabilities remain underrepresented in STEM fields due to barriers such as insufficient access to technologies, fieldwork, and facilities; a lack of resources and knowledge about obtaining accommodations; limited self-advocacy skills; and attitudinal barriers such as prejudice and stigma (Prema & Dhand 2019). Canadian university and government laboratories often have high workbenches and cabinets that are difficult to access, challenging both disabled faculty and students (Prema & Dhand 2019). Additionally, fieldwork poses challenges due to uneven terrain, lengthy and strenuous trips, inflexible transportation options, and inaccessible washrooms (Nicholas 2021). Additional barriers limiting disabled students' STEM participation include teachers' lack of knowledge regarding learning disabilities, lack of inclusive teaching environments, limited time to address individual students' needs (Asghar et al. 2017), difficulty accessing appropriate accommodations, lack of role models, and stigmatization (Prema & Dhand 2019), and attitudes of faculty and staff (Dolmage 2017; Price 2011). This discussion is particularly relevant for wheelchair users; however, accessibility for blind, deaf, and neurodivergent individuals also requires consideration. Concepts such as Universal Design are promising with regards to tackling these challenges but have yet to become the norm. Buildings, as both consumers and producers of clean energy, are where people with disabilities spend >90% of their time. Building design and operation are major parts of our research, and we will explicitly consider the disability aspect.

Dynamics. Another critical issue is debilitation, through which people become disabled via violent conflict, the toxification of air and water, or exploitative labor dynamics (Chen 2023; Erevelles 2011). Similarly, environmental destruction harms human health; Chase & Johnson 2024; Chen 2023). Debilitation is also intersectional as far as racialized, Black, and Indigenous groups are disproportionately impacted by violent conflict (Aho & Liu 2010), environmental

disasters (Halstead 2016), air and water toxicity (Henderson & Wells 2021), and exploitative labor dynamics (Lynes 2023).

2.5 Women

Women experience sexism and continued inequities despite notable progress in terms of gender equity. This section outlines the systemic barriers that exist for women in the research disciplines of the initiative and their impacts on the individuals and the research ecosystem.

Overview. Industrial changes related to the energy transition often harm women, but this harm depends on their sociopolitical position (Collins 2019; Crenshaw 1991).

Volt-Age and RTI-specific issues. Systems of patriarchy in society and culture (Butler 1990) can limit women's representation and participation in STEM research and decision-making for energy transition projects. Further, women experience an inhospitable STEM climate (Mazur et al. 2019), intimidation and discrimination (Hanson 2023; Khan et al. 2021), and tokenism (Mazur et al. 2019). Moreover, STEM culture offers a hyper-competitive climate that favors men (Denis & Heap 2019). In short, the current STEM professional training environments are the exact inverse of the those recommended for ethical energy futures. Adding to these burdens, women in STEM are expected to perform better than men (e.g., assessed significantly more harshly in academia, with double workload; O'Connell & McKinnon 2021).

Although increased representation is a right step, simply "*adding more women and solar panels is not enough*" to build feminist energy systems (Bell et al. 2020). Also critical is the importance of structural change, such as understanding intersectional dynamics in decision-making (Bell et al. 2020; Johnson et al. 2020); gender dynamics at the community level for small-scale energy transition projects and decentralized renewable energy (Buechler et al. 2020); and gendered impacts in the transition from oil and coal-based economies (Lahiri-Dutt 2023). It also entails investigating how electrification technologies are gendered, and co-constructing users in a gendered way, as shown by Vivi & Hermans (2022; who revealed the masculinities of Tesla's narratives). Within these, a significant issue is inventorship and patents, which are heavily male dominated: <13% of all inventors listed on U.S. patents are women and women apply twice as often but succeed 70% as often as men (Fechner et al. 2022).

2.6 2SLGBTQIA+

Individuals from 2SLGBTQIA+ communities face gender and sexual diversity-related marginalization. This section outlines the systemic barriers that exist for individuals from 2SLGBTQIA+ communities in the research disciplines of the initiative and their impacts on the individuals and the research ecosystem.

The inclusion of 2SLGBTQIA+ people in STEM opens the door to hidden externalities or impacts that may not otherwise be noticed by a more homogenous (or homogenous) group of people. Counter to current practice, the broad spectrum of gender and sexual diversity must be considered explicitly, including people of minoritized sexual orientation, non-binary, trans, gender diverse people, and those whose identities cut across existing descriptions. Several critics question the potential of a single-identity matrix – such as 2SLGBTQIA+ – to induce systemic change (Burchiellaro 2022, 2023). STEM and industry scholarship points to issues of queer belonging (Hanson, 2021); lack of role models (Beagan et al. 2021; Trottier 2021); and overall feelings of isolation in the workplace. Costanza-Chock (2018, p. 4) notes how workplace culture and resulting products or systems are intertwined: “daily lived experiences [demonstrate] how larger systems – norms, values and assumptions – are encoded and reproduced.” These cisgender and heteronormative systems give rise to 2SLGBTQIA+ marginalization. There are also intersectional barriers (Cech 2022); e.g., on campus, Black 2SLGBTQIA+ often feel ‘othered’ in both Black communities and 2SLGBTQIA+ groups (Leyva et al. 2022).

3. Co-Creation of the EDI Action Plan – ‘Nothing about us, without us’

This section outlines the specific approaches that were used and will continue to be used when co-creating with individuals from underrepresented groups during both the development and implementation of the action plan.

Our approach builds on the comprehensive strategies developed by Concordia and its partners: Dalhousie University, Toronto Metropolitan University, and University of Calgary. The foundational strategies enable us to leverage their expertise and engagement without posing additional burdens on the underrepresented communities, and to co-create a network of networks. Our EDI Action Plan will be an evergreen document evolving throughout the program to address the feedback and changing needs of the communities, and as research findings emerge.

3.1 Specific Approaches Used

Leveraging existing strategies and initiatives: Volt-Age capitalizes on the robust groundwork laid by existing institutional strategies. For example, Concordia’s Indigenous Directions Action Plan, Indigenous Directions Bridging Program, 5-year plan to decolonize and Indigenize curriculum and pedagogy, Anti-Black Racism Task Force, EDI Working Group, and the Standing Together against Racism and Identity-based Violence Task Force have involved thorough consultations and engagement with underrepresented groups. Additionally, TMU’s FEAS is a partner in the Canada-wide IBET Momentum Fellowship, offering \$30,000 per year for up to 4 years to two full-time PhD students, enhancing support for Indigenous and Black engineering students through financial aid, mentorship, and training opportunities.

Involving our research communities: Through surveys and workshops, researchers are invited to co-create the EDI-related research trajectories of Volt-Age, building on their practical experience working with underrepresented groups. Feedback has been obtained via surveys of all Concordia faculty members; e.g., regarding funding strategies, capacities, synergies, and feelings of inclusion.

Partnership with Indigenous Clean Energy (ICE): The ICE partnership has been instrumental in shaping Volt-Age. Indigenous communities and enterprises are heavily invested in Canada’s electricity generating infrastructure – in fact, they are the third-largest owner of clean energy assets. ICE exemplifies Indigenous leadership in the energy sector and brings a pan-Canadian Indigenous land and culture-based perspective to research. Their support has provided invaluable insights and guidance, helping ensure that our project aligns with Indigenous knowledges, perspectives, and needs, and that Indigenous leadership shapes the focus and design of Indigenous research activities.

Attract team members with co-creation expertise: We will deliberately attract researchers and external experts who are experienced in co-creation and community engagement. They will bring a wealth of experience from previous projects, such as engaging with Indigenous communities on sustainable energy solutions and working with racialized groups to address systemic STEM barriers. For example, some Volt-Age researchers are collaborating with Indigenous communities that are operating large solar power plants and other initiatives and who are working to optimize energy management for individual households. Building on these trusted relationships and fostering Indigenous co-leadership is a major goal of Volt-Age.

3.2 Concrete Approaches for Implementation

Consultations with individuals, groups, and communities: The EDI Action Plan will undergo regular consultation processes, giving stakeholder individuals, groups, and communities additional opportunities to evaluate and validate it. This will include community meetings, feedback sessions, and iterative revisions based on input from key individuals and community representatives, ensuring the plan remains relevant and effective. As noted above, we will work with existing initiatives at Concordia University and partner institutions. For example, the Concordia University Black Perspectives office can help to facilitate discussions with racialized minorities and the Equity Office can help to convene 2SLGBTQIA+ communities to improve the content and implementation of the EDI Action Plan. Mechanisms with underrepresented groups will include:

- Workshops and consultations: This is an overarching mechanism, with planned follow-ups with all individuals engaged to ensure accountability.
- Participatory action research: Engaging community members as active partners in RTI processes.
- Participation in developing governance and management mechanisms: Consultations to ensure these involve diverse representation, equitable decision-making, and strong leadership on EDI matters.
- Focus groups and interviews: Especially regarding lived experience and barriers.
- Periodic surveys: To gain feedback on Volt-Age activities, e.g., inclusivity of research funding calls.
- Mentorship programs: Mentorship and training opportunities to individuals from underrepresented groups at all levels, including highly qualified personnel (HQP) and early career researchers (ECR), delivered by compensated individuals with lived experience with the aim of promoting diverse perspectives, creating a positive RTI environment, and enhancing professional and career goals.

Living Labs: The Volt-Age Living Labs will emphasize real-world social, economic, and environmental technology impacts to ensure they are achievable in technology, but also

sustainable, valuable, and equitable for users. We will co-create RTI projects with diverse stakeholders, especially underrepresented groups who are disproportionately impacted by energy transition projects. The specific mix of stakeholders will change depending on the context of the individual Living Lab (we envisage 5-10) and the energy problem being addressed. The local partners will ensure that solutions align with community needs, cultural values, and environmental factors, thus fostering ownership and sustainability. Volt-Age will support the structuring of Living Labs for long-term sustainability; e.g., through a toolbox, prototype community data agreements, inter-Lab knowledge exchanges, and governance structures emphasizing community empowerment.

3.3 Co-Creation Approaches Taken to Identify Barriers and Solutions

This section outlines the co-creation approaches undertaken and the specific underrepresented groups involved in identifying barriers and potential solutions.

Leveraging expertise. We first leverage the extensive expertise and experience of our researchers, their innovative methodologies and deep community engagement. For example, one approach is captured in Aphrodite Salas' project on the clean energy sovereignty journeys of Indigenous communities. The project places reconciliation, collaboration, and inclusivity at the center of the journalistic process by engaging in research-creation journalism and new teaching methods based on a holistic model of working with Indigenous peoples and communities. These research relationships resulted from several years of partnership with Indigenous Clean Energy (ICE) and clean energy leaders in Kiashke Zaaging AnishinaabekGull Bay First Nation and the Inuit community of Inukjuak.

Another approach is captured through Andreas Athienitis' research. A major safety concern for people with disabilities during ice storms in Québec is injuries from slipping. This was identified through consultations with Montreal area municipalities and individuals with disabilities. Through these, practical solutions involving clean energy technologies, such as solar or geothermal systems to melt ice on sidewalks, were proposed. A key barrier was the prevalent belief that ice storms are infrequent and people with disabilities can simply avoid walking during these times. On the contrary, thin, and invisible ice poses a constant risk, underscoring the need for proactive, clean energy solutions. Several municipalities have now expressed interest. Volt-Age can play a crucial role in developing and demonstrating such solutions, co-created with, and targeted to, the needs of underrepresented groups, in partnership with key decision makers.

Iterative co-creation and consultation. This EDI Action Plan has been circulated among relevant stakeholders through partner institutions. This includes (and will include) soliciting feedback and co-creating activities and policies with underrepresented groups. Furthermore, the plan incorporates feedback gained through a survey sent out to all Concordia faculty members in all

faculties and disciplines regarding the inclusivity of Volt-Age's research funding strategy. The EDI Action Plan has been reviewed by the Equity Office and Black Perspectives Office at Concordia University and discussed with senior collaborators at ICE. Further feedback will be continuously integrated to refine and enhance approaches, making this an evolving, responsive effort.

3.4 Findings of Co-Creation re. systemic barriers

Many barriers faced by underrepresented groups in the context of energy transition were noted in our literature review. These were validated and elaborated through our co-creation approaches.

Racialization and structural racism: Racialization, as highlighted by Adebayo (2024), impacts representation in STEM fields, downstream effects of energy projects on racialized communities, and exploitation in energy projects. Barriers include lack of representation, inequity in hiring practices, inhospitable work environments, and immigration policy issues (Phillips et al. 2022; Cech 2022; Liu 2019). Colleagues from the Concordia Black Perspectives Office noted, for example, the risk of overemphasizing resilience as a goal and a positive outcome of energy projects. This focus can tend to obscure the systemic barriers that disproportionately force marginalized communities into a need to build resilience in the first place.

Impact on Indigenous communities: Energy projects often violate treaties and disrupt traditional governance and livelihoods (Samson 2014). Barriers include lack of meaningful consultation, environmental destruction, and disregard for Indigenous sovereignty (Banks 2020; Wood & Rossiter 2016). ICE collaborators stress that mitigating measures include adequate funding to build and maintain relationships and integrate Indigenous insights throughout a project – from problem definition to design to implementation to monitoring and evaluation. Furthermore, engagement in governance structures was noted in consultations to be a critical step towards highlighting ongoing systemic biases and discrimination for Indigenous Peoples but also for other underrepresented groups.

Gender biases in STEM: Women face discrimination, intimidation, and tokenism in STEM fields (Mazur et al. 2019). Barriers include inhospitable work environments, hyper-competitive climates, and lack of structural support for gender-balanced decision-making (Denis & Heap 2019; Stephens 2020). Our focus groups with women in STEM confirmed gender biases in their fields of research. Colleagues at the Equity Office and others noted the strong need to include qualitative perspectives as well as quantitative measures to evaluate progress to overcoming barriers, noting limits to the latter for utterly understanding the lived experience of female team members.

Challenges for 2SLGBTQIA+ individuals: Issues of queer belonging and lack of role models create feelings of isolation in STEM (Beagan et al. 2021). Barriers include cisgender and heteronormative values that perpetuate marginalization (Cech 2022). Colleagues from the Equity Office specified the need to consider the diversity of sexual orientations and gender diversity, and to ensure that support structures do not unintentionally overlook people of minoritized sexual orientation.

Disability and debilitation: Disabled individuals face barriers in STEM participation and professional success (Dolmage 2017), including attitudinal barriers, lack of inclusive teaching, and environmental factors contributing to debilitation (Chen 2023). Interviews with people with disabilities confirmed challenges related to accessing accommodations and inclusive environments in STEM training, and consultations through our research network likewise highlight a need for awareness-raising.

Community-specific challenges: Consultations hosted by ICE and others highlighted that unique challenges may be faced by individuals' communities, such as environmental impacts, competing priorities within communities, and cultural beliefs.

Government accountability: Various levels of government accountability in electrification projects create confusion and challenges for communities trying to understand how to make effective changes. This hinders community-led initiatives and advocacy efforts.

Financial barriers: Underrepresented groups often face significant financial barriers that limit their participation in energy transition. These include lack of access to seed funding, lack of financial literacy, and the prohibitive costs of implementing sustainable technologies.

Intersectional barriers. In the context of electrification, intersecting aspects of identity such as race, gender, disability, and sexuality are important. For example, Indigenous women often face unique challenges arising from the intersection of gender, ethnicity, and their community roles. These can affect their participation in STEM and even in community consultations. They may also encounter difficulties in accessing funding for renewable energy projects, navigating complex governmental regulations, and ensuring that their traditional knowledge is respected in the development of innovative technologies. Similarly, Black 2SLGBTQIA+ individuals experience compounded marginalization that harms their professional and social experiences. For energy transition, they may be excluded from decision-making processes, lack the funding needed to participate in or benefit from electrification projects, and face discriminatory practices within the energy sector. These, and other, intersectional barriers require tailored approaches to address them; e.g., providing targeted financial support and education, monitoring meaningful participation in decision-making and implementation, and developing policies that recognize and integrate traditional knowledge.

4 Resistance to EDI

4.1 Potential EDI Resistance Faced by Leaders

Individuals leading the action plan may face potential resistance to EDI measures in the context of implementing Volt-Age's EDI Action Plan. These can include:

1. Tension between EDI advocates, program leadership and participants: Compliance vs. support, cynicism and misunderstandings, defensiveness, resource allocation concerns, interdisciplinary collaboration challenges.
2. Increased burden: EDI initiatives add to workload and slow implementation, at least for some.
3. Fear, misunderstanding, and skepticism: Some participants may lack deep understanding, belief, and genuine commitment.
4. Personal EDI concerns: Perceived discrimination or bias, barriers, micro-aggressions, toxic environments, career, etc.

4.2 Measures to Reduce Resistance

Volt-Age's leadership and governance teams will use these measures to mitigate resistance and address it when it occurs:

1. Training and mentorship: (a) annual mandatory EDI training for leadership, managers, committee members, and staff, led by the EDI Coordinator, and approved by the EDI Committee and the Equity Office; (b) online mandatory EDI training for all others (researchers, HQP, research staff) on the research and training environment and community interactions; in both cases, with no funds distributed until training has been completed.
2. Grass roots initiatives: Provide staff with opportunities, incentives, and resources to be leaders of EDI initiatives, as a collective responsibility and not a top-down mandate.
3. Identify benefits from EDI and co-creation. "Show, don't tell." Diversity must be seen to improve RTI – not just be said to do so. We will track, measure, and communicate this, especially through Living Labs, and openly acknowledge challenges for solutions requiring systemic change.
4. Accountability spaces: Led by people independent of Volt-Age, individuals at all levels can confidentially share concerns, and obtain support. Dialogues may be initiated and mediated, potentially formally within the regulatory framework(s) of Volt-Age and partner institutions (e.g., Code of Rights and Responsibilities, Office of Rights and Responsibilities, or Ombuds Office).

5. Intellectual Property (IP) and Commercialization

We will roll EDI principles into the realms of IP and commercialization. This is highly novel and challenging, as the needs of both affluent and marginalized communities/actors must be considered. Key aspects:

Equitable collaboration: (a) Diverse partners, equitable voice, and partnerships (b) research capacity-building in development nations; (c) Benefits for all partners, not just affluent.

Publication and Open Science: (a) Open access publishing where possible; (b) Publishing in respected local journals (not just international) to boost local dissemination/uptake; (c) Translate pivotal research outcomes for non-English speaking communities; (d) Push for global standards that promote fair access to scientific knowledge and innovations.

Patent licensing and commercialization: (a) Fair, transparent, and non-biased licensing practices, considering economic realities in developing countries; (b) Affordable access to patented technologies in development nations; (c) Focus on innovations addressing specific needs of developing countries and marginalized communities; (d) use of public-private partnerships where appropriate.

Increasing Inventor Diversity: (a) Targeted outreach and innovation access for underrepresented groups; (b) Mentorship through connecting diverse inventors with professional advisors; (c) Policies and funding opportunities prioritizing diverse inventors, including grants and scholarships, streamlined patent applications.

6. EDI for Greater Research Excellence

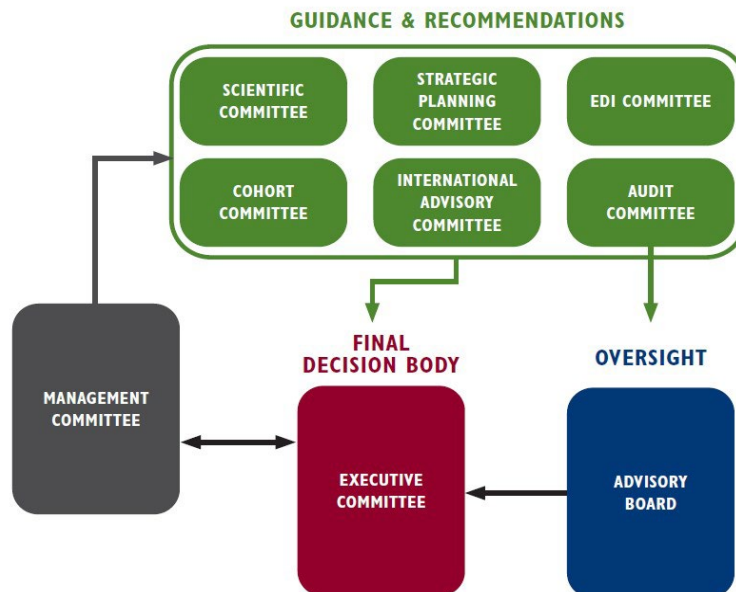
Volt-Age fosters a research environment where we aim to investigate how: (a) Diverse perspectives uncover new research questions and innovative solution pathways; (b) Inclusive practices lead to technologies that are more effective and socially acceptable; (c) Community involvement ensures that research addresses real-world problems and benefits all members of society; (d) Critically, research excellence is being redefined towards inclusivity:

- Making the EDI Action Plan required reading for all Volt-Age funded researchers;
- Evaluating academic assessment practices, spanning from student assessment (the role of GPA) to ECR and faculty assessment, particularly in Volt-Age's research disciplines;
- Building institutional knowledge and capacity on alternative practices for more inclusivity through training and workshops (Concordia initiated a Speaker Series on Evaluating Excellence in January 2024); and
- Systematically implementing new evaluation practices and a new understanding of excellence in the disciplines and institution. The Office VPR (Vice President Research) at Concordia led a workshop series in 2023-24 on this, which will continue in 2024-25 and lead to the signing of the Declaration on Research Assessment (DORA) in 2025.

7. Addressing Systemic Barriers in the Administration, Governance and Other Activities of the Initiative

7.1 The Administration, Governance and Other Activities of the CFREF Initiative

Volt-Age operates under a collaborative governance structure, where oversight is provided by both the Executive Committee and the Advisory Board. The Executive Committee oversees the program’s operations and serves as the highest decision-making body, reporting to the Office of the Vice President Research, Innovation and Impact (OVPRII). The OVPRII provides institutional support by serving as a liaison between Volt-Age and other institutional structures, including the Office of the Provost and the School of Graduate Studies, and ensures alignment with university policy and mandates. The Scientific Committee guides and oversees research-related components, including Volt-Age-funded projects and teams. The EDI committee guides and oversees the embedding of EDI principles across the program, the strengthening of Indigenous partnerships and is tasked with providing targeted recommendations and feedback. The Advisory Board, International Advisory Committee, and Audit Committee provide additional oversight and support through their advisory roles and accountability to the Executive Committee. Non-ex officio positions in the governance are filled through an open nomination process followed by selection led by the Executive Committee that prioritizes members of underrepresented groups once a qualified applicant pool is identified. The governance structure is illustrated below.



The Executive Committee has been restructured with the appointment of an official VPRII at Concordia University, following a period of transition in that office since the beginning of the program, and now serves as the final decision-making body. This change brings enhanced stability to the Volt-Age program and prompted a governance update to support more effective and inclusive decision-making. Chaired by Concordia's VPRII, the Committee meets quarterly to consider recommendations from consultative committees and to approve major decisions relating to budgets and funding, best practices on governance, and management of conflict of interest. It is composed of the VPs of Research from the partner universities, two members from the EDI Committee (the CEO/Co-Chair and the Executive Director of Concordia's Equity Office), the Senior Director of Concordia's Indigenous Directions office, the Chair of the Advisory Board, and one representative from the Cohort Committee. The participation of EDI Committee members as ex officio (voting) members ensures that EDI is not only embedded in governance processes but also holds decision-making power. Having the Senior Director of Indigenous Directions Office on the Committee ensures that Indigenous perspectives are meaningfully represented in decisions and have an influential voice in the program's direction. Likewise, the participation of a representative from the Cohort Committee ensures that the voices of Volt-Age students and research trainees are heard and considered in strategic decisions.

The Advisory Board provides broad expert guidance to Volt-Age, with a particular focus on IP and commercialization, supporting the implementation of the program's strategic plan and helping ensure sustainability beyond seven years. With consideration of best practices in EDI, it provides recommendations to the VPRII and the Executive Committee on strategic decisions. The Advisory Board includes up to 15 voting members ranging from early-career to senior leaders, drawn from leadership of partner universities, industry, community organizations, financial sector, leaders from the Indigenous clean energy field, a representative of the Cohort Committee, and other key stakeholders. The CEO participates in the Advisory Board and shares input from the EDI Committee, which he Co-Chairs.

The Scientific Committee is responsible for reviewing and providing guidance on strategic research plans, proposing and implementing R&D programs (e.g., design, budget, resource allocation, project selection, monitoring, and consultation with the International Advisory Committee) under the oversight of the Executive Committee, advising on the recruitment of scientific staff, and managing potential conflicts of interest, all with a strong emphasis on EDI principles, included as in their formal Terms of Reference. Comprising up to 15 members, it includes scientific leaders, representatives from each partner institution, both Co-Chairs of the EDI Committee, and the Senior Advisor, Partnerships and Indigenous Engagement.

The EDI Committee is responsible for developing processes, policies, and recommendations to ensure that EDI principles are incorporated throughout Volt-Age, across different levels and spheres of activity. Co-Chaired by the EDI Scientific Director and the Volt-Age CEO, the committee brings diverse professional expertise in EDI across education, institutional

leadership and administration, and research. Committee members include the Executive Director of the Concordia Equity Office, one representative from the Indigenous Bridging program, researchers and equity leaders from partner universities, Concordia University researchers (including one ECR), and a representative of the Cohort Committee, with Volt-Age EDI staff (EDI Coordinator, EDI Senior Research Advisor, and Director of Engagement, Living Labs, and EDI) as observers. Its formal Terms of Reference include (*inter alia*): to guide the implementation of and periodically refine the EDI Action Plan; develop measurable goals and metrics related to recruitment, retention, representation, and participation of equity-deserving groups; collaboratively guide the development and implementation of EDI capacity-building initiatives within Research, Technology and Innovation (RTI); actively engage with stakeholders to inform EDI activities; develop a robust evaluation and accountability system to assess, report on, and improve the impacts and effectiveness of actions to uphold EDI principles; advise on key strategic and operational initiatives; and support the coordination of EDI reviews for funding call evaluations and participate in funding approval processes.

The Cohort Committee (to be formed September 2025) will be composed of Master's and PhD students and Postdoctoral Fellows. It will ensure that student representation on the Volt-Age Executive Committee, Advisory Board, and EDI Committee genuinely reflects the perspectives of the broader research trainee community. The Committee serves as a platform to capture the diverse voices of research trainees, offering recommendations on training outreach, and engagement opportunities, and nominating student representatives to governance bodies.

The Management Committee is responsible for day-to-day operations of Volt-Age, including the hiring, professional development, mentoring, training, and retention of administrative staff; support in project development, stakeholder engagement, IP development and management, tech transfer; budget, and finances, and; data collection, management, and analysis; supporting the secure collection and use of the EDI-related data, data security audits and reporting to TIPS. The Committee comprises the Director of Operations, Director of Engagement, Living Labs, and EDI, Director of Technology Development, CEO, and Deputy CEO. The Committee is responsible for operationalizing the EDI Action Plan by developing key milestones, tracking progress, and ensuring EDI KPIs are met.

The International Advisory Committee (IAC) comprises leading researchers and practitioners from around the world working on electrification. It convenes quarterly to advise on research-to-impact strategies based on global best practices, identifying synergies and gaps in Volt-Age-funded projects, and linking Volt-Age researchers with international Communities of Practice and help support international knowledge exchange, including between Global North and South and with Indigenous communities from across the globe.

7.2 Implementation and Monitoring of the EDI Action Plan

The EDI Committee is accountable for oversight and monitoring the progress of the EDI Action Plan and has the authority to intervene in case of significant deviations or challenges. Cross-membership with other committees not only ensures responsibility for EDI is shared across the program but also facilitates the identification and resolution of roadblocks by ensuring regular communication and collaboration across the governance structure. The Executive Committee and the Office of the VPRII are accountable for the implementation of the Action Plan itself, including documenting how recommendations made by the EDI Committee have been considered in decision-making. While accountability lies with the highest decision-making bodies, the responsibilities for fulfilling the actions and achieving the KPIs outlined in EDI Action Plan are shared and embedded throughout the Volt-Age governance and administration bodies as shown in the table on the next page.

Volt-Age EDI Accountability Framework					
Teams/Bodies and Key Actions					
Body Type	Body	Key Actions	Action Type	Collaborative Action Body (if applicable)	
GOVERNANCE BODY	OVPRII	Indigenous Action Plan	Governance & Administration	EDI Committee	
		Inclusive publication and authorship	Research & Innovation	Scientific Committee	
	Executive Committee	Strong Indigenous relations	Research & Innovation	Scientific Committee	
		Inclusive representation in governance	Governance & Administration	EDI Committee	
	Scientific Committee	EDI in research design	Research & Innovation	Engagement, Living Labs & EDI Team	
	International Advisory Committee	International Indigenous community collaborations	Capacity Building	Concordia Indigenous Research Advisory Circle	
	EDI Committee	Indigenous Bridging Program	Capacity Building	Engagement, Living Labs & EDI Team	
		Co-creation of funding calls	EDI Research	Engagement, Living Labs & EDI Team	
		Engagement, Living Labs & EDI Team	Scholar-in-residence program	Capacity Building	EDI Committee
			Youth summer program	Capacity Building	EDI Committee
VOLT-AGE TEAM		EDI climate survey	Governance & Administration		
		EDI funding assessment	Governance & Administration		
		Indigenous participation in Living Labs	Research & Innovation		
		EDI training for leaders and PIs	Capacity Building		
		Researcher EDI certification	Capacity Building		
		EDI certification impact assessment	EDI Research		
		Living Lab socioeconomic mapping	EDI Research		
		Operations Team	Accessible labs	Research & Innovation	Engagement, Living Labs & EDI Team
			Funding call assessment	EDI Research	Engagement, Living Labs & EDI Team
		Intellectual Property & Commercialization Team	Inclusive patenting practices	Research & Innovation	EDI Committee
		Publication and patent training for HQPs and ECRs	Research & Innovation	EDI Committee	
		Publication and patenting monitoring	Research & Innovation	EDI Committee	
INSTITUTIONAL DEPARTMENT	School of Graduate Studies	Just energy micro-credentials	Capacity Building	Engagement, Living Labs & EDI Team	
		Training on data management practices		Instructional and Information Technology Services	
	Concordia Library		Governance & Administration		
	Instructional and Information Technology Services				
		Secure data storing	Governance & Administration	Concordia Library	
	Concordia Indigenous Research Advisory Circle	Assessment of Indigenous participation and co-creation	EDI Research	Executive Committee	

7.3 Actions to Address Systemic Barriers and Support the Full Participation of Underrepresented Groups

Goals and implementation strategies were developed in a comprehensive process including a literature review, findings from EDI reports of the Seed Call funding, multiple discussions with Indigenous elders, and outcomes of meetings with Concordia's Youth Outreach Program. They were also shaped by insights gathered during the Volt-Age Curation Process, a series of 16 events, including workshops on EDI, partnerships, and other relevant topics, designed to collect perspectives from researchers, administrators, and students to inform the development of the Impact Call for Proposals, which engaged over 200 individuals. Detailed success metrics for all measures are outlined and tracked in the Volt-Age Performance Measurement Plan. Equity Targets, Monitoring, and Contingency Planning are included in section 9.4.

Measures to address systemic barriers for the participation of underrepresented groups in governance and administration include:

Inclusive governance representation: [GOALS] Diverse representation within governance, management, and administration. [IMPLEMENTATION] Establish clear policies and procedures that align with program goals for the inclusion of equity-deserving groups in all governance and leadership functions. Actively recruit diverse candidates and underrepresented groups through inclusive position descriptions and targeted posting. Embed EDI considerations and anti-bias safeguards into open nomination and transparent selection processes, including inclusive outreach strategies and the use of term limits and rotations to support equitable and representative participation.

Diverse and inclusive meeting practices: [GOALS] Empower marginalized, underrepresented voices in meetings and workshops. [IMPLEMENTATION] Train Chairs and program leadership in inclusive practices including collaborative agenda-setting and techniques for engaging quieter participants and managing dominant voices, and ensure meeting times and formats are flexible to accommodate diverse needs. Implement a roundtable discussion format where each member is invited to provide input, followed by open discussion.

Visibility and reporting: [GOALS] Higher visibility of EDI efforts, including transparent reporting. [IMPLEMENTATION] Publish and promote EDI initiatives, achievements, and ongoing challenges online, in print, and at Volt-Age events. Produce annual EDI impact reports that include data on progress toward EDI KPIs, gaps identified, and follow-up actions, for both research projects and for the broader Volt-Age program. Conduct EDI audits (first external one scheduled for September 2025, and planned to be repeated in September 2027), both internal and external, to evaluate compliance, impact, and areas for improvement.

Transparency in processes: [GOALS] Transparency in governance, management processes and decision-making. [IMPLEMENTATION] Publish terms of reference and membership lists.

Minutes of meetings available for audits if requested. Maintain open feedback channels (through climate surveys, EDI audits, and weekly staff meetings where EDI is a standing agenda item) and regularly review procedures for equity, fairness, accessibility, and accountability.

EDI research and evaluation: [GOALS] Evidence-based improvements to EDI implementation. [IMPLEMENTATION] Require EDI evaluation plans and metrics in all initiatives, recruit HQP for analysis, collect and report anonymized demographic data to inform adjustments. Develop an action plan that identifies actions or supports to implement if EDI KPIs are not met or progress stalls, including additional outreach, training, or policy revisions.

Measures to support participation of underrepresented groups in other activities:

Mentorship and professional development: [GOALS] Professional development for individuals from equity-deserving groups. [IMPLEMENTATION] Mentee-mentor matching in the Volt-Age Cohort to provide mentorship and guidance by experienced researchers and leaders (who can access mentorship training) with lived expertise regarding equity questions for individuals from equity-deserving groups. A focus group study, scheduled for the Winter 2025–2026 term, will be conducted with Cohort members to better understand their mentorship needs and expectations.

Build EDI capacity: [GOALS] Increased EDI knowledge, capacity, and leadership amongst researchers, support staff, and HQP. [IMPLEMENTATION] Offer workshops, conferences, and training sessions to researchers, research trainees, and Volt-Age administration on topics such as GBA+, inclusive research design, Indigenous history, data security and sovereignty, and others, to empower individuals with new skills and knowledge that help bolster EDI initiatives. Notices of award and Terms and Conditions for research projects specify the minimum number of required capacity-building events per year that recipients must commit to participating in. Failure to comply may result in consequences including the withdrawal of funding. All committees with decision-making, oversight, or management responsibilities are scheduled to receive Inclusive Leadership training between October-December 2025.

Equitable project evaluation: [GOALS] Fair, bias-mitigating, and equitable evaluation processes for funding and project selection. [IMPLEMENTATION] Clear policies and processes about how reviewers are recruited and trained to ensure fair assessment. Evaluation criteria made publicly available and include potential social impact of the funded projects and their contribution to EDI.

Inclusive conference design: [GOALS] Intentional conference and event design to amplify the voices and address the interests of equity-seeking groups. [IMPLEMENTATION] Implement a comprehensive set of inclusive event guidelines that go beyond content to ensure equitable representation and accessibility at every level. Prioritizing diversity of perspectives and representation, including Indigenous peoples and equity-deserving groups across all panels, bilingual delivery in both official languages, and the use of physically accessible venues. Volt-Age event coordinators work closely with the EDI team, the Concordia Office of Rights and

Responsibilities, and the Events and Sustainability teams, and receive training and support in consistently applying these practices across all Volt-Age events. In addition, we are developing a call for proposals to support knowledge mobilization through workshops and conferences, where funding will be partially contingent on the inclusivity of the proposed event design.

Targeted outreach and recruitment: [GOALS] Increased participation of researchers from underrepresented groups in Volt-Age calls. [IMPLEMENTATION] Targeted outreach and recruitment, scholarships and grants coordinated in partnership with organizations representing interests of equity-deserving groups, and other incentives to encourage participation. Co-develop calls in collaboration with groups, such as Equity Office, Indigenous Directions, Indigenous Research Advisory Circle (CIRAC), Black Perspectives Office, and others.

Community engagement and partnerships: [GOALS] R&D projects and Living Labs cocreated with local and Indigenous communities that engage in meaningfully collaboration in both research design and research practice. [IMPLEMENTATION] Developed a mandatory reciprocity agreement to be co-authored with and co-signed by researchers and Indigenous community representatives to demonstrate commitment of researchers to truly partner with Indigenous communities in co-developing and governing research projects. Support capacity building and provide tailored advice to researchers on how to create and maintain trusted reciprocal relationships with Indigenous partners and communities. Regularly engage with these communities through meetings, surveys, and collaborative events (more details in Indigenous Co-Creation Training section) to ensure commitments and expectations are being met.

Capacity building and training: [GOALS] Increased general knowledge of EDI within researcher communities and of RTI within underrepresented groups. [IMPLEMENTATION] Offer workshops, seminars, and training programs focused on research methods, project management, and other relevant skills in partnership with organizations representing interests of underrepresented groups. In collaboration with Concordia's Youth Outreach Program and local nonprofit organizations, identify local groups with limited access to RTI opportunities, and offer stipends to support their participation in capacity building or other educational programs.

8. Research Practice - Composition of the Research Team(s), their Management and the Work Environment

8.1 Addressing Barriers to Establishing and Maintaining Diverse Research Teams

The following actions will be implemented to address the barriers identified in the literature review and co-creation activities to establish and maintain diverse research teams that include excellent students, trainees and early career researchers who are racialized; African, Caribbean and Black; Indigenous; persons with disabilities; women and individuals who are from the 2SLGBTQIA+ communities. Mechanisms are based on best practices from the literature and apply to all, including trainees:

- Establish partnerships with organizations and communities representing underrepresented groups to promote research opportunities, building capacity amongst researchers to build partnerships and providing adequate time to do so through Volt-Age Curation Process. Source: Advocated by Costanza-Chock (2020), who emphasizes community-led design for inclusivity.
- Develop and enforce a comprehensive anti-discrimination policy that includes training on unconscious bias and diversity and does not conflict with existing policy frameworks, in close collaboration with relevant institutional offices. Source: Cech (2022) highlights the importance of awareness of intersectional privileges in STEM and the benefits of bias training.
- Implement flexible working hours and remote work options to accommodate unique needs, including those of parents and caregivers. Source: Hill Collins (2021) discusses societal structures impacting women's participation, advocating flexibility to support diverse lifestyles.
- Facilitate regular discussions and workshops on EDI topics to cultivate an inclusive culture, within administration, research community, and research trainees, with this EDI Action Plan as required reading beforehand. Source: Stephens (2020) calls for antiracist and feminist leadership in energy sectors, suggesting regular engagements to foster transformative changes.
- Set measurable EDI goals, revisit regularly, and publish progress reports to ensure transparency and accountability. Source: Bell Daggett & Labuski (2020) argue for systemic transformation in energy systems, emphasizing a need for clear and measurable EDI objectives.
- Apply existing institutional anti-harassment policies and extend institutional behavioural expectations to all members of Volt-Age. Developed a specific Code of Conduct for in-person and virtual meetings, with confirmation of agreement required at registration and poster of the Code visible at in-person sessions. Training materials will also include bystander intervention strategies and emphasize a zero-tolerance

policy for inappropriate behavior, ensuring a supportive and respectful workplace culture.

- Identify and address obstacles to equitable recruitment of undergraduate and graduate students, and postdoctoral fellows, particularly from underrepresented groups. This includes funding opportunities (scholarships, financial aid), collaboration with organizations advocating and representing underrepresented groups in designing recruitment campaigns, conference travel bursaries, research assistant positions with Volt-Age, horizontal competencies and language training, and placements with partners to demonstrate clear career pathways.

8.2 Addressing Barriers to Training, Development, and Mentoring

The following actions will be implemented to address the barriers identified in the literature review and co-creation activities to ensure equitable access to the training, development, and mentoring opportunities provided to the research teams:

- Develop targeted training programs that are inclusive of various learning styles and accessibility needs. Source: Asghar et al. (2017) highlight the importance of considering diverse learning disabilities and the necessity for inclusive educational environments in STEM. Our training program prioritizes flexible, accessible, and learner-centered approaches. To meet diverse learning needs and preferences, the program will offer a variety of formats, including seminars, interactive workshops, co-creation sessions, peer-led sessions, and self-paced activities. Delivery will be blended, combining in-person, synchronous online, and asynchronous online components to support learners with different schedules, locations, and learning styles. Support materials will include a curated mix of videos, readings, and interactive content, allowing participants to engage with the material in ways that best suit their needs.
- Provide mentorship opportunities that provide compensated mentors with either shared lived experience or relevant knowledge in navigating systemic barriers, while allowing mentees to choose matches based on personal, academic, or professional priorities. Source: Beagan et al. (2021) discuss the benefits of mentorship that acknowledges the unique challenges faced by 2SLGBTQIA+ individuals, which can be extended to other underrepresented groups.
- Establish scholarships and fellowships (scholar-in-residence) specifically aimed at equity-deserving groups and individuals who may not hold a conventional graduate degree, to support their professional development and engagement in research and knowledge mobilization within Volt-Age's key working areas. Source: Johnson et al. (2020) emphasize the role of targeted financial support in fostering inclusive energy transitions, highlighting the intersection of gender and social equity.
- Get the EDI Committee's guidance on training and development programs regularly to ensure they meet the evolving needs of a diverse group, with the Cohort Committee

submitting equity concerns and possible improvements directly to the EDI Committee to inform training review. Source: Stephens (2020) suggests the need for organizational structures that support antiracist and feminist decision-making processes, including monitoring and adapting training programs.

- *Implement a transparent feedback mechanism* that allows all members (Volt-Age researchers, research trainees, administration) to provide input on training and mentoring programs, which can be used to make ongoing adjustments. Source: Bell Daggett & Labuski (2020) argue for structural changes in energy systems, including feedback processes that ensure programs are meeting the needs of all participants.

8.3 Equity Competencies in Training Strategies

To ensure the Volt-Age initiative addresses equity and inclusion within the energy transition and engineering project context, the Engagement, Living Labs, and EDI team will embed the following equity competencies in training (internal Concordia programs & external workshops):

- *Indigenous Co-Creation Training*: Blanket Exercises, *an experiential teaching tool based on participatory education methodology that explores the historic and contemporary relationship between Indigenous and non-Indigenous peoples in the land now known as Canada*, led by Indigenous elders as an entry point for all Volt-Age members (researchers, trainees, admin). OCAP training on data management for PIs and EDI personnel. Under guidance of our Senior Advisor of Partnerships and Indigenous Engagement and CIRAC, co-develop trainings on Indigenous engagement, research co-creation, reciprocal governance, and two-eyed seeing (Etuaptmumk), and develop skills for meaningful engagement with Indigenous communities.
- *Gender Equity and Inclusion Training*: Training on gender biases, creating supportive work and research environments for women and 2SLGBTQIA+ individuals, GBA+, and addressing gender-specific challenges in the energy sector.
- *Equitable Research Practices Training*: Training on equitable research design and data collection, ensuring diverse perspectives are integrated into research processes.
- *Anti-Racism Training*: Mandatory training on recognizing biases, promoting inclusivity, and understanding racial inequities, to understand systemic racism and its impact on engineering and energy sectors.
- *Accessibility Training*: Training on designing accessible infrastructure and technologies using universal design principles. Expert participation in panel discussions at annual conference on accessibility by design in new technologies. Workshops developed in collaboration with Concordia's District 3 to support all Volt-Age members in fostering inclusive practices and environments that embrace neurodiversity.

8.4 Addressing Barriers to Having Safe and Inclusive Work Environments

Ensuring a safe and inclusive work environment is a crucial prerequisite for true inclusion and for individuals from underrepresented groups to truly have equitable opportunities for growth and leadership. Achieving this goal requires a multifaceted approach that includes prevention, the establishment of protected disclosure process for dialogue, conflict resolution, and reporting of unacceptable behaviors (e.g., harassment, racism, sexism, etc.) and circumstances and the prompt resolution thereof.

It is well documented that often, minoritized colleagues do not have access to respectful work environments, including collegiality and accountability. The Management Committee is responsible for implementing prevention efforts that encompass comprehensive educational programs, such as training sessions, alongside stringent regulations and processes designed to deter unacceptable behaviors that render a workplace unsafe and/or non-inclusive. Volt-Age administrative staff receive regular training from the Office of Rights and Responsibilities on addressing harassment, discrimination and other threatening conduct. Volt-Age has required training on these topics for all researchers, students, and postdoctoral fellows, as well as training on many equity competencies as outlined above, which further serve to support the creation of a safe and inclusive workplace. The Volt-Age Code of Conduct was developed based on the Concordia Sustainable Event Guide, created by the Office of Sustainability and Hospitality Concordia. Volt-Age adapted these guidelines to reflect the specific needs of our program while maintaining alignment with the ethical standards outlined in the original guide. The Code of Conduct is publicly available on our website and applies to all Volt-Age activities, setting clear expectations for respectful engagement, accessibility, and inclusion. It is regularly referenced by the Volt-Age team during meetings and events, displayed as a poster at all in-person gatherings, and must be accepted by participants during event registration. In case of breaches of the Code of Conduct, unacceptable behaviour will not be tolerated, and anyone asked to stop must comply immediately. Volt-Age Management Committee reserves the right to take any action deemed appropriate, including removal from meetings, events, or communications; exclusion from committees; and disqualification from future participation—without prior warning. Volt-Age members are supported through the Concordia Office of Rights and Responsibilities, which can be contacted for guidance and assistance.

These measures are central to Volt-Age's commitment to maintaining a respectful and inclusive workplace, where accountability is upheld for all individuals at all levels without exception. Inclusive, collaborative leadership helps establish psychological safety of individuals within Volt-Age (Woods et. al, 2024). Another measure to promote psychological safety and create a safe and secure environment is to create physical spaces (in addition to those that might already exist at the institution) where staff, researchers, and HQP can discuss, report, and resolve any concerns without judgement or biases. When processes are designed to ensure that individuals' experiences are heard, and prompt actions taken on the basis thereof, this inspires trust and confidence in Volt-Age being an environment with protected disclosure

processes where individuals from all backgrounds and experiences can thrive and advance in their careers.

9. Research Design and Implementation

9.1 Key Strategies Towards GBA+ in Volt-Age's Research:

- *Inclusive research design assessment*: Volt-Age funded research projects are expected to: (1) be rigorously inclusive and have high potential for just energy transition impacts; 2) address risks of exclusion and reinforcing inequalities; (3) seek to address inequities in research design and solutions, demonstrating an understanding of which parts of society benefit most and least from the research, and addressing potential risks of unintended consequences of the research; (4) be informed by an intersectional lens; (5) be co-created with communities, ensuring transparency & transparent communication of critical outcomes, especially to groups who might be more affected; and (6) avoid greenwashing and diversity washing, given global competition and economic interests. Capacity-building for researchers on these topics is provided in the Volt-Age Curation Process leading up to calls, and they are embedded throughout proposal sections, with points awarded for integrating GBA+ and EDI across the entire project.
- *GBA+ training and workshops*: Provide mandatory training to researchers and research trainees to build capacity on GBA+ and improve the required knowledge and skills for inclusive research design based on ongoing assessment of EDI and GBA+ in research design and practice.
- *New micro-credentials on "Just energy transition"*: Developed in collaboration with the School of Graduate Studies and Center for Engineering in Society, a micro-certificate program on the "Just energy transition" will be made available to individuals both within and outside of the Volt-Age network. Topics will include energy justice, electrification, GBA+ and EDI in technology, and co-creation of research with communities. Alternative assessment criteria will be employed to reduce systemic barriers embedded in traditionally colonial institutional structures.
- *EDI Progress Updates*. Research teams are required to submit annual EDI progress updates, including evidence of GBA+ integration and inclusive research design. Based on these submissions, research projects will receive tailored guidance and support from the EDI Research Advisor in identified challenge areas. Projects that demonstrate insufficient progress or lack of meaningful EDI implementation will face consequences, including withdrawn funding.

9.2 Indigenous Research Co-Creation

Research relationships with Indigenous peoples must be built thoughtfully over time in a spirit of reciprocity and trust and centered around ethical engagement. All projects with Indigenous partnerships are required to submit a reciprocity agreement co-authored with the community defining expectations and responsibilities for engaging in a co-creation process, including mechanisms for the inclusion of Indigenous knowledge and ways of knowing. A guide for researchers is also made available to assist in starting conversations to identify the needs and priorities of Indigenous communities, which then serve as the framework for the cocreation and co-design of research goals and solutions. Following the guidance of five Indigenous elders from across the country, Volt-Age made a provision for Impact Round projects to allow for partners to be added within the first year to give time to develop relationships, particularly with Indigenous communities.

The recruitment of Indigenous researchers, students, trainees, partners, and collaborators will be encouraged and supported across institutions and communities, in part by leveraging existing relationships and networks. In alliance with Indigenous Directions, the Indigenous Bridging Program, and CIRAC, specific actions will be taken to increase representation of Indigenous researchers and students within the Volt-Age team, such as scholarships, recruitment within communities, mentorship, and professional and career development opportunities. As a starting point, research teams and partners were invited to a full day in-person workshop, and later a half-day virtual workshop, both focusing on building and maintaining meaningful, reciprocal collaborations with Indigenous communities. These sessions featured several Indigenous clean energy specialists with diverse backgrounds and experiences who have worked successfully with university research teams in the past.

This is how Volt-Age will value Indigenous ways of knowing, and how it will extend research knowledge in the field that is significant for Indigenous Peoples and communities and contribute to decolonization:

Volt-Age will mobilize institutional resources and supports (both Volt-Age and OVPRII) to encourage researchers to learn about Indigenous ways of knowing – and of *conducting* our program – to help them co-create knowledge with Indigenous partners. Volt-Age has already begun organizing Blanket Exercises, which will continue to be held in small groups for all staff members, researchers, and research trainees. To ensure meaningful and effective interaction on the challenges and barriers of energy transitions, our Senior Advisor Partnerships and Indigenous Engagement together with colleagues at Indigenous Clean Energy will continue to lead workshops and discussions that bring together researchers with Indigenous elders and knowledge keepers. Volt-Age aims to address issues such as sustainable energy solutions and climate resilience from a holistic perspective aligned with Indigenous worldviews and priorities

by integrating topics such as energy sovereignty, food sovereignty, and multigenerational perspectives into electrification research.

A **scholar-in-residence program** will support Indigenous scholars and increase the visibility of their work in fields related to electrification. This program will provide resources and support for Indigenous scholars, fostering an environment where Indigenous research can thrive and providing opportunities for cross-fertilization of ideas across disciplines and lived experiences. This program seeks to reduce or break down barriers to entry by creating opportunities for researchers or knowledge holders who may not have completed conventional graduate programs, or for post-PhD researchers whose research is aligned with EDI aspects of Volt-Age.

Adhering to OCAP principles, Volt-Age will ensure Indigenous communities have ownership, control, access, and possession of their data and research findings, promoting transparency and trust in our research partnerships. Volt-Age is providing EDI staff and lead researchers (PIs on Volt-Age funded projects) with mandatory OCAP training.

9.3 Role of Partner Institutions in the Development and Implementation of the EDI Plan

This is how Volt-Age's partner institutions (i.e., other universities who have a leadership role in the initiative) will actively participate in the development and implementation of the EDI action plan:

Membership in EDI Committee: Partner institutions each assigned a representative to the EDI Committee and are engaged in the implementation of the EDI Action Plan.

Data collection, analysis, and monitoring of progress for EDI: Partner institutions are gathering EDI data within their research projects. This data is analyzed collectively to identify shared challenges and opportunities, report on progress, share successes, and refine programming.

Pooling of partner capacities and engagement for EDI: Through membership in Volt-Age governance, partner institutions: 1) advise on the implementation of EDI initiatives (e.g. training materials, youth outreach, etc.); 2) create opportunities to engage with diverse communities for co-creation; 3) provide guidance to help researchers integrate EDI into research programs; 4) contribute to crafting an EDI Action Plan that reflects the realities and barriers of each partner institution; 5) guide EDI training and mentorship development for faculty, staff, and students across institutions, leveraging technology for asynchronous access.

Sustainable EDI: Partner institutions are collaborating with Concordia and key groups (including equity-deserving and Indigenous communities) to develop strategic EDI plans. These plans set clear goals, timelines, and milestones, and identify ways to embed EDI into core institutional activities. While focused on the seven-year CFREF funding period, the aim is to lay groundwork for lasting change.

9.4 Research Impact (mobilization and translation)

The following actions will be implemented to ensure EDI within the mobilization and knowledge translation strategy of the initiative.

Community level: Living Labs are main vehicles for mobilizing and translating knowledge, bringing together multiple research domains and sectors to advance transdisciplinary approaches to electrification. Many Impact projects have also taken this approach, recognizing the need to engage deeply with partners in knowledge mobilization to enhance impact. The Volt-Age Engagement, Living Labs, and EDI team will support projects in mobilizing knowledge across all projects that highlight EDI challenges, contributing to evidence-based approach to EDI and ensuring that diverse viewpoints are represented not only in the research but in broader reflections and discourse about the acceptability and implications of research outputs and innovations. Financial returns, commercialization opportunities, and intellectual property generated will be equitably distributed or shared, with an emphasis on fair benefit-sharing with equity-deserving groups. This work will be led by the Volt-Age IP & Commercialization team, e.g., through: 1) inclusive profit-sharing models; 2) community reinvestment and allocation of profits to community development, particularly in service of underrepresented and marginalized communities; 3) support entrepreneurs from equity-deserving groups, increasing patent holder diversity; 4) funding for open-access publications, taking into account Indigenous ownership of data and commercialization imperatives. Volt-Age will assess EDI in knowledge mobilization in two ways: 1) context-specific targets, to be co-developed with the communities themselves and applying only to an individual project; and 2) overarching goals applicable to all funded projects.

Systemic: Our knowledge mobilization strategy will also focus on public policy; e.g., through partnerships with the Institute for Research on Public Policy (IRPP), the Public Policy Forum (PPF), the Transition Accelerator, Indigenous Clean Energy, and many municipal governments and Indigenous leaders. Input to policies and political discourse will address the needs of equity-deserving groups within a decarbonized, resilient, and thriving built environment.

9.5 Actions to Address EDI in the CFREF's Research Disciplines

To transform the research disciplines of the Volt-Age program and influence Canada's research ecosystem towards greater incorporation of EDI, the team will implement several bold and innovative actions specifically tailored to our initiative's goals. Of special note are two: Living Labs as test beds, and the integration of social sciences and humanities (SSH) disciplines more generally.

Living Labs and equity-deserving groups. Volt-Age will establish 5-8 Living Labs in a variety of settings, including Indigenous communities and various urban environments. Criteria for siting individual Living Labs will include alignment with Volt-Age values, vision, and timeline (7-year program); outline for an electrification project conceptualized, with strong relevance to local actors, flexibility to include research component, and co-funding; potential for scaling and/or

replication, and; alignment with Volt-Age research communities' areas of expertise. These Living Labs will act as a showcase for transformative research, focusing on community-led solutions for decarbonization and electrification where research questions are developed based on community priorities and needs instead of the inverse, as is traditionally the case. Each Living Lab will incorporate EDI principles in its design and operation in a "cradle to grave" approach. This includes, for example, incorporating a broad range of perspectives in initial problem definition, in the prioritization of challenges faced and potential solutions, and in researcher recruitment in the research processes employed (focusing on cocreation methods, e.g., see section 1.8), and taking an equity-focused approach to technology development and commercialization (e.g., see the IP discussion in section 1.10, and in section 2.4). Overall, these mechanisms will contribute to building inclusive participation of and leadership from equity-deserving groups. By fostering direct engagement with communities, we ensure technological advancements are relevant, accessible, and beneficial to all.

In expanding the mandate of the Living Labs team to fostering engagement across all projects, Volt-Age is prioritizing a shift towards this concept of research with communities, for communities more broadly. This integrated model enables the Engagement, Living Labs, and EDI team to support both Living Labs and more traditional research initiatives (Impact projects), enhancing the mobilization of community-informed insights, strengthening cross-project learning, and maximizing the societal impact of the program's research outputs. Volt-Age does put special emphasis on the underrepresented groups explicitly named by CFREF, as demonstrated throughout this Action Plan. However, given the very nature of energy transition and decarbonization means that there are several other equity-deserving and disenfranchised groups that are likely to be affected by related industrial activities. Impacts may be either positive or negative, but (as for other equity-deserving groups) are too often negative. These groups include, among others, low-income residents, recent immigrants, and those suffering mental health and/or addiction issues. All tend to live in areas, both urban and rural, that are often the targets for "renewal" – with the result of increasing their rents or displacing these individuals entirely. Conversely, decarbonization technologies may allow energy production at lower costs than through fossil fuels, *lowering* living costs for these individuals. Usually, their needs are not considered, as they also suffer from significant discrimination and bias, including intersectional ones, whether they are in the "named" CFREF underrepresented groups or not.

At this point, exactly how such groups may be affected is not clearly documented, but these impacts are an important focus for transdisciplinary NSE/SSH research, co-creation, and long-term impact tracking. Thus, our research designs – especially within Living Labs but increasingly across all research – will explicitly include consideration of these additional marginalized groups, which we believe constitute an important inclusion in our conception of EDI and especially regarding the co-creation maxim of "nothing about us, without us."

Integration of SSH more generally. Through targeted research calls and a curatorial approach to supporting the development of Living Labs and other research projects (e.g. the Volt-Age

Curation Process), Volt-Age will emphasize the integration of SSH with STEM fields. By fostering inter- and transdisciplinary collaboration, Volt-Age will encourage researchers to address complex societal challenges more holistically. This approach provides two-fold benefits. First, it helps ensure technological innovations are informed by social context, ethical considerations, and human impacts, making them more inclusive and relevant. Second, it informs the research process itself, especially as it pertains to co-creation and other EDI-related implications, again leading to more inclusive and relevant research methods and findings.

Bypassing conventional admission criteria to avoid systemic biases. Recognizing that systemic exclusion often begins at the gateway to academic and research careers, Volt-Age will pilot bold initiatives to create equitable access to research pathways. On the scholarly level, Volt-Age will establish a Scholar-in-Residence program to support researchers from non-traditional academic backgrounds, including community-based experts, Indigenous knowledge holders, and independent researchers whose lived experience and grassroots expertise are vital to just transitions. These scholars will co-lead research streams, teach, and mentor across projects, actively transforming disciplinary boundaries and knowledge production. On the student level, Volt-Age implements GPA-blind graduate admissions for its cohort, particularly within Impact Call associated projects. This bold approach seeks to address the well-documented limitations of GPA as an equity-neutral metric. Volt-Age does not require applicants to submit GPA information to be considered for the Volt-Age Cohort program and funding. The data shared with faculty members selecting candidates from the cohort pool collected by the School of Graduate Studies also does not include information regarding GPA. Instead, trainees are evaluated based on their research potential, lived experience, community engagement, and alignment with Volt-Age's mission. This inclusive model redefines academic excellence beyond traditional metrics, opening pathways for students historically excluded from advanced research training.

Summary. Our research approach – initially devised for Living Labs but now broadened to all projects – provides a mechanism through which individual energy transition research disciplines can be transformed over time. Research will be clearly situated in society, beginning with a community-based needs assessment required for all Living Labs, followed by shared problem definition, and through to testing and refining innovations in an iterative process involving researchers and diverse community stakeholders, including both the federally-designated groups, and other marginalized groups suffering discrimination and bias. In this way, researchers will learn from and communicate failures as much as successes and be able to shift the way research questions, and research projects are designed and undertaken.

By broadening the Living Labs research approach across projects, Volt-Age research will create testbeds not just for technology development within energy transition, but also for novel approaches to EDI participation, co-creation, and impacts. Living Labs and other Volt-Age research will provide opportunities to evaluate EDI processes, in part through two dedicated

research calls in years 4 and 5 on EDI in electrification research, contributing to the evidence base on EDI. Rather than solely discovering new technologies, Volt-Age research projects will also provide opportunities for two novel types of EDI-related assessment: (1) which technologies best serve the needs of diverse populations; and (2) what types of stakeholder engagement and co-creation work best, including identification of barriers, challenges, and solutions, especially with equity-deserving groups.

In addition to reshaping research practices and participation, Volt-Age is also transforming access to academic pathways. Through initiatives such as GPA-blind graduate admissions and a scholar-in-residence program for non-traditional experts, we are challenging exclusionary and colonial academic norms and creating equitable entry points for historically marginalized individuals. Concordia University's recent advances in this space, signing the San Francisco Declaration on Research Assessment and launching the Pathways to Impact initiative, are fully aligned with Volt-Age's plans and there is strong institutional collaboration and support. These bold actions expand definitions of excellence and ensure that diverse forms of knowledge and experience are fully integrated into Canada's research ecosystem.

Overall, this community-rooted, interdisciplinary, and access-oriented approach ensures that technological advancements are more equitably distributed and that community feedback meaningfully informs research and implementation, driving systemic change not only within Volt-Age, but across Canada's research landscape toward greater equity, diversity, and inclusion.

9.6 Equity Targets, Monitoring, and Contingency Planning.

Volt-Age is committed to embedding EDI throughout all structures and operations, in alignment with best practices in research, expectations from TIPS, and national frameworks such as the Dimensions Charter and GBA+. To ensure EDI goals are grounded in evidence, KPIs are being established informed by a combination of institutional data, provincial and national demographics, and federal equity sources. These include data from Concordia 2021 Employee Equity Census, Statistics Canada census information, and the equity targets set by the Canada Research Chairs (CRC) Program. The findings of a planned external Volt-Age EDI audit (to be performed in September 2025) will be integrated into our KPIs. The EDI Audits will help set a reference point for future progress and change. Based on this landscape, Volt-Age is working toward improving representation of equity-deserving groups across its governance, researchers, staff, and trainee teams. Significant progress towards increasing representation in governance bodies has been made over the past months (see <https://www.concordia.ca/research/volt-age/people.html>). While specific goals will be tailored to reflect disciplinary and regional baselines, the aspirational targets aim for 50% representation of women and gender-diverse individuals, 25–30% of racialized persons, 2-4% of Indigenous Peoples, and 7-8% of persons with disabilities. These numbers will be used as

directional goals to guide intentional, measurable progress over the lifespan of the CFREF initiative. Progress will be tracked using a mixed-methods monitoring and evaluation framework.

In cases where progress toward equity objectives is not achieved, the EDI Committee will be convened to guide remedial action. The EDI Committee may also recommend to the Executive Committee the engagement of external experts, if needed. Adaptive measures may include bridge programs, focused workshops, strategic reallocation of EDI contingency funds, and mid-cycle plan reviews based on feedback and evaluation findings. If data reveals persistent underrepresentation at senior levels, Volt-Age will explicitly acknowledge these structural gaps in reporting and introduce succession planning and mentorship strategies (e.g., leadership shadowing, skill-building fellowships) to build representation over time. With this structure, Volt-Age will ensure continuous improvement, accountability, and responsiveness to evolving equity needs across the initiative.

9.7 Data Management

The EDI team conducts annual demographic data collection and self-assessment surveys. To improve efficiency while maintaining high standards of privacy and security, the process will transition from outsourcing to an internal system. This system adheres to the requirements for Class 4 (restricted) data, highly sensitive information intended solely for named individuals, and follows strict protocols to prevent any external transmission. For collecting sensitive data, the institution recommends REDCap as a secure web application for building and managing online surveys and databases.

The Volt-Age Management Committee oversees the secure collection and use of EDI-related data and periodic security audits, with support from Concordia's Information Technology Services in providing necessary infrastructure and staff training on security protocols and restricted data handling. In addition to external training mentioned above, Concordia Library also supports Volt-Age staff and researchers by offering training on data management and access to data storage facilities.

10. EDI Action Plan Budget

In comparison to the original submission, we increased the financial commitment to ~\$11 million. In combination with more explicit institutional support and stronger governance, this enhances the implementation capacity and reflects a unified and holistic commitment to EDI.

This commitment is operationalized through a robust EDI infrastructure that includes dedicated leadership and advisory roles, Indigenous engagement staff, EDI-focused research positions, and a Scholar-in-Residence program. We support ongoing training, youth outreach, mentorship, responsible data governance, and targeted funding initiatives—ensuring EDI is embedded across recruitment, research design, implementation, and community engagement.

11. Summary Table of Actions Taken to Address Systemic Barriers

11.1 Data Collection Strategy

Surveys will be used to collect data from Volt-Age researchers, partner institutions and organizations and engaged communities. Once per year, all PIs will complete a questionnaire to allow for the creation of year-over-year traceable statistics, including data on EDI practices in research input (diverse and inclusive hiring, HQP training, strength of partnerships, distribution of resources) an output (impacts and benefits amongst researchers and communities, and other indicators to be developed with partners to reflect local priorities). A streamlined survey template will be prepared and be used in collecting data from communities engaged in Volt-Age research projects and Living Labs. Both the questionnaire and the survey template will be reviewed and amended by the Research Ethics Unit of the Office of Research and Equity Office (Concordia) and by partner institutions to ensure respect, consistency, and adherence with best practices.

11.2 Privacy and Confidentiality

Volt-Age will be guided by the OCAP principles of Ownership, Control, Access, and Possession engagement with First Nations' data, and work closely with the Concordia University Research Ethics Unit to ensure adherence in all Volt-Age funded activities to applicable university policy, TCPS2 Loi 25. Data will only be collected if needed (with needs assessed by the EDI Coordinator in collaboration with the Research Ethics Unit). The purpose of data, access, and period of its storage will be communicated clearly to all individuals about whom data is being collected, who will need 'opt-in' to the collection of data (that is to say, divulging personal

demographic data will not be required of any research participant, and opt-in will be carefully documented).

11.3 Self-Identification Data Collection

Data will be collected and stored in line with regulations and best practices outlined above (OCAP, TCPS2, Loi 25), where possible avoiding collection methods requiring data storage on United States servers subject to the Patriot Act and where unavoidable giving clear notice. No names or information will be requested, and all data will be at least de-identified and anonymized where possible. Data will be collected and stored by a verified, trusted, off-site organization and backed up securely on Concordia University servers, stored for a maximum of 10 years with commitment to delete following final reporting.

Building trust amongst the broader Volt-Age community on the collection and storage of data will help to encourage self-identification through the streamlined survey template, carefully developed and validated through multiple offices. Only a small team will have access to this data, namely the EDI Coordinator, Chair of the EDI Committee, and the Volt-Age Data Analyst

11.4 Actions and Deadlines

The table below, summarizes **all actions** outlined that will be taken to address systemic barriers within the initiative’s governance, research practice, design and impact, in addition to the actions that will be taken to transforming the disciplines of the initiative and Canada’s research ecosystem more broadly.

Table B - Summary Table of Actions Taken to Address Systemic Barriers

Actions that will be taken	Systemic Barrier(s) the Action is meant to address	Lead individual or group accountable for implementing the action	Deadline by which the measure will be implemented	Performance indicator(s) data that will be collected to measure progress
Form an EDI committee	All barriers, institutional level	EDI Scientific Director	November 2024	Fundamental to all areas
Annual EDI climate survey	All barriers; equitable, inclusive, and diverse work and research environment	EDI Coordinator	June 2024	Performance report, openly available on website; KPI (key performance indicators) fundamental to all areas

EDI funding assessment	All barriers, equitable; access to research funding	EDI Senior Research Advisor, EDI Coordinator	March 2026	Performance report, openly available on website; informs future funding calls
Inclusive and diverse representation in all governance bodies (advisory board, committees, partnerships)	Barriers for all underrepresented groups to access governing positions; 3-step process	EDI Scientific Director, Volt-Age CEO	August 2025	50% women voting members in all committees and Advisory Board by 2026; representatives from underrepresented groups on committees; demographic matching by 2027
Inclusive research and innovation projects that incorporate GBA+	Barriers for all underrepresented groups to benefit from research	EDI Scientific Director, EDI Senior Research Advisor	January 2025 + ongoing	PIs and Co-PIs report on inclusive research design of research projects; openly accessible research designs
EDI embedded in design of Impact Projects	Lack of holistic project designs and include considerations of underrepresented needs	Scientific Committee (coordinated by Theme, Platform leaders and students)	February 2025 +Ongoing	4-5 workshops; outlined research design as deliverable from all PIs and Co-PIs
All laboratories built by Volt-Age fully accessible based on needs identified	Barriers to accessing laboratory equipment for people with disabilities	Director of Operations	March 2026	Square footage of laboratory space made fully accessible
Strong relations with Indigenous Communities	Indigenous communities to co-creating and co-leading research	Theme 3 Co-Leads, EDI Research Advisor	May 2025, ongoing	No. of attendees, no. of workshops, Impact Project engagement
Inclusive research publication and authorship	Barriers for underrepresented researchers to access scientific research and be authors/publish	EDI Scientific Director, Director of Technology, EDI Coordinator	January 2026, ongoing	Budget will be provided for publication activities; All Volt-Age PI a Co-PI will be required to complete inclusive publishing workshop (#attendees).

				Seminar series on publishing practices
Inclusive and diverse patenting practices	Barriers for underrepresented researchers to access knowledge and practices in patenting	EDI Scientific Director, Director of Technology, EDI Research Advisor	January 2026, ongoing	Workshop (No. of attendees)
EDI in commercialization strategies and research-to-market pathways	Inequitable access to IP, licensing, and spin-off opportunities for underrepresented researchers	Director of Technology, Director of Engagement, Living Labs, and EDI, EDI Senior Research Advisor	October 2025, ongoing	% of underrepresented researchers accessing commercialization funding, IP, and startup opportunities.
Indigenous participation and ownership in renewable, clean energy living labs	Limited financial resources, RTI knowledge	Director of Engagement, Living Labs, and EDI	2024-2025	Number of funded projects demonstrating Indigenous participation and shared ownership.
Training on EDI competencies for all leaders, PI's and research trainees	Addresses barriers that students, HQP, staff experience	EDI Senior Research Advisor	December 2024, ongoing	No. of trainings and trainees annually + EDI workshops
Publishing and patenting training for HQP and ECR	Barriers for marginalized groups in access to publishing and patenting	EDI Scientific Director. Director of Technology	December 2025	Training offered, No. of attendees
EDI certificate for researchers	Various (e.g. RTI skills, teamwork, etc.); modules to target specific barriers	EDI Senior Research Advisor	April 2026	No. of trainees and certificate holders
Scholar-in-residence program	For individuals who do not hold a typical degree (diverse knowledge holders) or are post-PHD and whose research is aligned with EDI aspects of electrification	EDI Scientific Director. Director of Engagement, Living Labs and EDI. EDI Coordinator	May 2026	No. of scholars applying and receiving scholarship

Micro-Credentials on "Just energy transition" for HQP with no GPA entry requirement	Lack of student knowledge re. energy transition	EDI Scientific Director, Director of Engagement, Living Labs and EDI. EDI Coordinator	March 2026	No. of courses offered, No. of HQP completing the courses
Equitable capacity building for the next generation of scientists: "Milli-Volt" summer school K-12 outreach	Barriers of children from marginalized groups to access science education and decarbonization and electrification	EDI Coordinator, Scientific Committee	July 2025, ongoing	No. of attendees, No. of events held
Indigenous Bridging Program collaboration- and offer course on decarbonization	Underrepresentation of Indigenous students in engineering	EDI Scientific Director	January 2027	Offering of courses, course outline, No. of students
Collaborate with international Indigenous communities on clean energy projects and exchange experience	Weak political representation of Indigenous communities	Chair of the Circle of Partnership, assisted by International Advisory Committee	January 2027	Number of events and workshops in collaboration with ICE on Indigenous collaboration worldwide
Impact assessment of EDI certificate	Investigates impact of EDI training	EDI Scientific Director	April 2028	Report on outcome, follow-up survey
Map socio-economic status and vulnerability level of affected persons in all Living Labs	Decarbonization on projects and electrification of vehicles are capital-expensive, might exclude citizens with low economic status	Director of Engagement, Living Labs and EDI	March 2026, ongoing	No. of digital maps of Living Labs indicating socio-economic, status, age, groups, gender, etc.-and update progress yearly
EDI monitoring of publications and patents	Barriers for underrepresented researchers to publish and build academic careers	EDI Scientific Director	May 2025, ongoing	Report on publication activity, authorship, journals
Diversity and inclusion assessment of funding calls	Barriers for groups who are traditionally underrepresented faculty members to	EDI Scientific Director, Director of Operations	September 2025	Reports (Seed Call April 2025, Impact Call ...)

	contribute to Volt-Age			
Co-create funding calls with underrepresented groups	Barriers for groups who are traditionally underrepresented faculty members to contribute to Volt-Age	EDI Scientific Director, EDI Coordinator	December 2024, ongoing	Survey results, report
Assessment of Indigenous participation and co-creation	Barriers for meaningful engagement of Indigenous Peoples in research co-creation	Chair of the Circle of Partnership, Director of Operations	May 2028	No. of Indigenous collaborators, communities, individuals in a) Impact call projects, b) Seed call projects, C) Living labs
EDI Research Call on electrification in Canada	Limited allocation of dedicated funding for EDI-focused research.	Director of Engagement, Living Labs, and EDI, EDI Senior Research Advisor	September 2026	Number of funded projects

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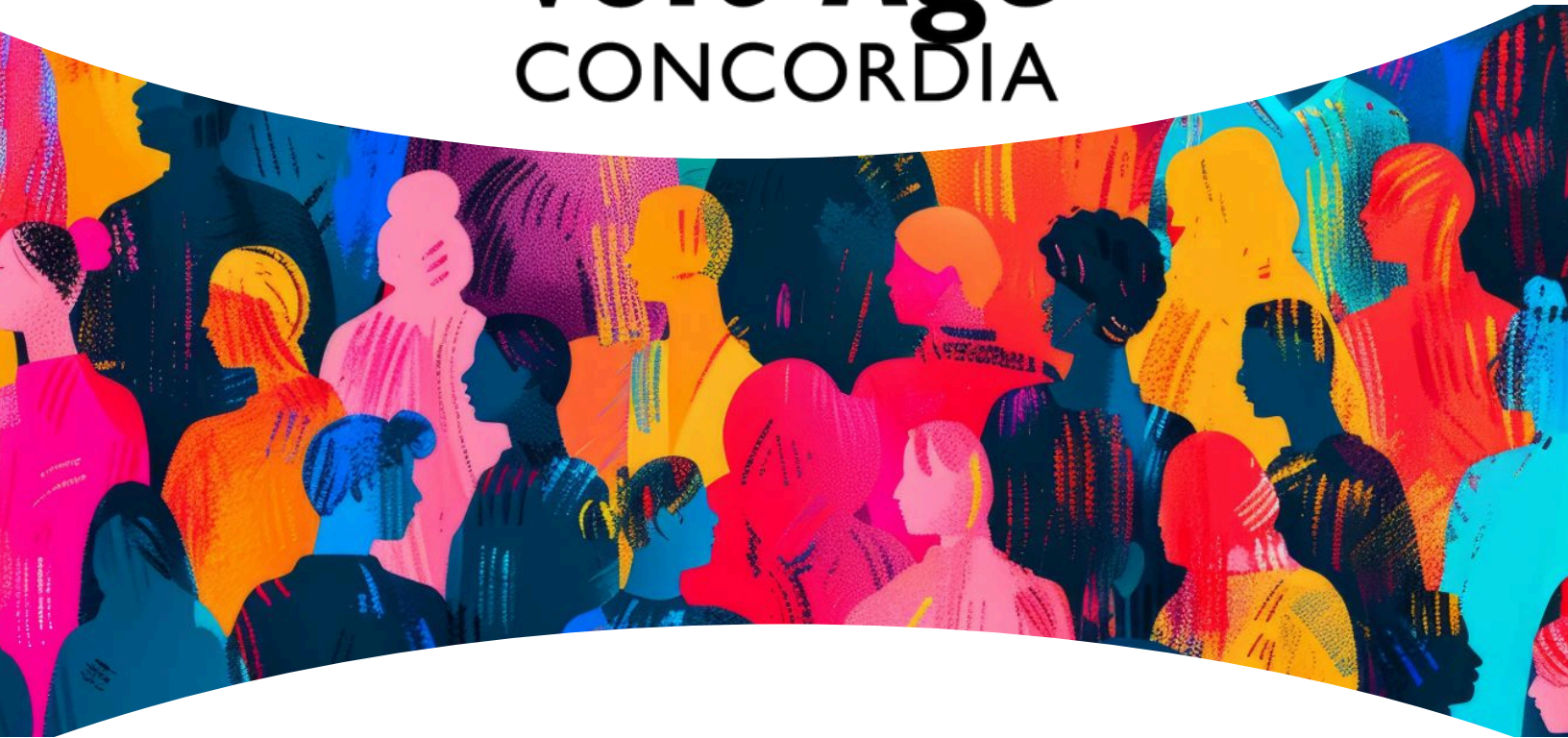
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Volt-Age est financé par le Fonds d'excellence en recherche Apogée Canada.

Volt-Age is funded by the Canada First Research Excellence Fund (CFREF).

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