Index

Aars, J. 171
Abrahams, M. 116
accidents 17, 196–200
  biking 146
  and communications 232
  highway bridge failures 197–200,
    250–51
  problems and solutions 206–8
  rail failures 196–7
  wildlife see collisions
Achenbach, J. 186, 192
adaptability
  network concept 5, 6, 39
  street 21, 151
adaptation, for climate change 111–16
  adaptive capacity concept 111–12
Aderinlewo, O. 5
Aerts, J.C.J.H. 101
air quality 1–2, 163–5, 175–6
Ali, F.M. 232
alternative fueling (or fuel) stations
  (AFS) 140, 141–2
alternative fuels 134, 137–9, 140–41
alternative transport modes 20–21,
  144–6
alternative vehicles 137–9
American Association of State
  Highway and Transportation
  Officials (AASHTO) 11, 12, 16–17
American Lung Association 164
American Public Transportation
  Association (APTA) 44, 106, 223,
  230, 240, 241
American Recovery and Reinvestment
  Act (ARRA) 239
American Rivers 71
American Society for Civil Engineers
  (ASCE) 30, 106
American Transportation Research
  Institute 85
Amtrak 91, 193, 231
Applebome, P. 19, 20
ApSimon, H. 1
Argonne National Laboratories 138
artificial barriers 115–16
asphalt 89, 92, 114, 150
Associated Press 90, 91, 201, 202, 232
Association of Bay Area Governments
  (ABAG) 190
Attoh-Okine, N. 5
Bai, Y. 7
Baker, S. 226
Ballon, H. 151
Barabasi, A.-L. 4
Barnard, C. 231
barriers
  around bridge footings 250
  artificial 115–16
  for security 171, 172
Bassil, K.L. 203
Baum, A. 139
Bay Area Rapid Transit (BART) 48,
  135, 230–31
Baykal-Gürsoy, M. 189
Beatley, T. 11, 12
behavioral changes 106, 116, 171
Beier, P. 171
Belcher, S. 228
Belson, K. 3, 21, 195, 208
Bender, M.A. 187
Bennett, A.F. 171
Berke, P.R. 135
Bernstein, A. 80
Berrang-Ford, L. 113
Bersani, B. 218
best practice 133
Bier, V. 218
biking 20
  accidents 146
  energy usage 145
New York City 80
trends in 20, 21
Bindoff, N.L. 95
biodiesel fuels 136, 141
biodiversity
index 168
strategy 174
Bishop, K. 188, 189
Blake, E.S. 187, 191
Blum, M.D. 99
Bohannon, J. 4, 5
Bollen, J.C. 1
Boon, J.D. 99
Borden, K.A. 102
Boswell, M.R. 137
bottlenecks 13
see also congestion
Botzen see Wouter Botzen
Bouchon, M. 186
Bourque, L.B. 188
bridges
accidents 197–200, 250–51
attacks on 224–5
bridge scour 193
damage due to natural hazards 188, 190, 191
floating 7
funding for 239
highway bridge failures 197–200
maintenance operations 165, 177
materials 207–8
projects 162
rapid replacement 7
vulnerability to attack 224–5
as walkways 19–20
for wildlife protection 173
Brinkman, N. 138
Broecker, W.S. 88
Brohan, P. 89
Brookings Institution 11, 12
Brown, L.R. 10
Brown, M. 107
Brown, R.D. 171
Bruni, F. 20
Brusaw, S. & J. 151
Bryant, L.P. 99
buckles and bends 90–92
Budzik, P. 8
Bullard, R.D. 3, 14–15, 204
Bunkley, N. 3
Burchell, R.W. 10, 11, 12, 16
Burkett, V.R. 99
Burlington Free Press 191
bus transit 20, 22, 36–7, 42
C40 Cities Climate Leadership Group 135
Caldeira, K. 82, 131
Callaghan, L. 37
Calthorpe Associates 11
Cambridge Systematics, Inc. 9–10, 83
Cannon, J.S. 71, 73
carbon calculator 107–11
carbon dioxide emissions
carbon footprint calculations 106–11
fossil fuel combustion-based 76–7
and fuel economy 85
and greenhouse gases 74–5
and petroleum 78–9
and stability points 82
carbon dioxide equivalents 74, 75, 79–80, 84
cascading effects 5, 6
Cayan, D. 99
Cazenave, A. 95
Ceder, A. 7, 22
Cellular Telecommunications and
Internet Association (CTIA) 227
Centers for Disease Control and
Prevention 183
centrality concept 4, 38–9, 167
Cervero, R. 9, 11, 83
CH2M Hill 3
Cho, S. 8
Cisco 227
Clark, D.W. 90
Clean Air Act (CAA) 82, 137, 161, 163, 164, 205
Clean Water Act 205–6
Climate Action Plans (CAPs) 133
climate change
impacts 85–105
measurement 105–11
networks and transportation 116–17
planning 130–137
solutions through adaptation 111–16
and transportation 71–85
cost-benefits 1–2, 138, 169, 250, 252
coastal areas 99–100
housing 101–2
population 100
population density 100–101
and sea level rise 87–8, 96, 102–4
Coker, M. 8
Colclasure, R. 242
Collins, S. 131
collisions
with bridges 198
cars in hurricanes 202
vehicles with wildlife 166, 168–9, 174
Columbia University Center for Climate Change Law 161
combustion
fuel, fossil fuel 76–7, 165
communication failures and successes 232–3
commuter rail transit 29, 42
correlation 49, 50, 67
collisions 51
infrastructure 42, 43
land area 47
passenger trips 44
population served 45–7
stations and miles of track 51–2, 53, 54
travel activity and density 56–7, 60–62
trips and miles of travel 57–60, 65, 68
complete streets 21, 147–8
crime control failures 231
concentration 251
as network concept 5, 8–9, 39
rail, by population and land area 49–51
rail, physical infrastructure 52–4
rail, travel activity 57–60
road and rail 67–8, 251
roadway 33–5
and vulnerability 219–20, 226
concrete 92, 114, 149, 208
congestion 33–5, 201, 219
Congress for the New Urbanism 147
connectivity 7, 16–17, 21–2
cyber, and vulnerability 226–8
roadway 30–33
urban rail systems 37–8, 39
and wildlife habitat 167, 173, 174
Conroy, M.M. 135
contraflow 8, 202
Cook, E.A. 166–7
Copeland, C. 205–6
correlations 39, 41, 47, 57, 60
Council on Environmental Quality 112, 159, 160
Cramer, P.C. 169, 171
Cusker, M. 104, 105
Cutter, S.L. 204, 220
cyber attacks 225–6
conventional vehicles 228–9
cyber connectivity 226–8
driverless vehicles 229
freight traffic 229–30
public transit 230–33
cyber security
disaster assistance 239
institutional mechanisms for 233–41
planning 235
response mechanisms 240–41
Cybersecurity Act of 2012 235
Daley, J. 85
Daniels, C. 231
dave, S. 75, 143–4, 145
davis, S.C. 71, 78, 83, 84, 106, 141, 163
debir 206, 208
debir accumulation 194–6
Defede, J. 200–201
demand response services 37
Denman, K.L. 82
D’Este, G.M. 5
detwyler, T.R. 10
deutsch, K.W. 6
dillow, C. 149
dircke, P. 114, 115
DisasterCenter.com 8
dobney, K. 90, 91
dodman, D. 12
dole, J.W. 171
domain Name System (DNS) 226
dorfman, M. 98–9, 104
driverless vehicles 229
earthquakes
characteristics of 185–6
evacuation 201
Haiti 184–5
Japan 3, 20–21, 116, 139, 186, 195, 208
Loma Prieta 147, 187–8, 190, 192
measures for 185
Northridge 190, 195
road closures and recovery 190
transit shutdowns and recovery 192
Eby, M. 82
ecological corridors 250
and bridges 173
classification of 169
enhancing wildlife movement 169–71
international cases 173–4
mesh density 168
and network concepts 166–8
non-road based 174
patches 167, 168, 177
rail-based 173
road-based 171–3
Elbakidze, L. 2
electric vehicles 3, 20–21, 139–40, 150,
208
elevating structures 115–16
Elinson, Z. 231
Emanuel, K. 86, 87, 93, 186
emergencies
Clean Air Act and transport fuel 205
Clean Water Act and water
discharges 205–6
environmental review 206
legal impediments and exemptions
204–5
maintaining equity 203–4
moving goods and services 203
other waiver possibilities 206
problems and solutions 206–8, 249
transportation and evacuation
200–203
emissions
carbon dioxide 74–5, 82, 85, 106–11
fossil fuel and petroleum 76–9
latency effect of emission controls
82
measurement challenges 82
see also greenhouse gases (GHG)
Englot, J. 7
Environment 360 93
environmental conflicts and solutions
18–19, 168–9, 176–7
environmental corridors see ecological corridors
environmental impact assessment
159–61
environmental impact statements
(EISs) 159–61
environmental planning 130–37, 152
environmental review 206
streamlining process 161–2
equity
maintaining, in emergencies 203–4
and transport networks 13–15
ethanol 138, 139, 140–41
European Commission, Joint Research Center 138
European Environment Agency (EEA) 168
evacuation 190, 200–203
Evink, G.L. 9
Ewing, R. 9, 82, 203
exemptions, regulatory
emergencies see emergencies: legal
impediments and exemptions
NEPA 160–61, 164, 206
Faris, C. 79, 112, 134, 135
Faust, K. 4, 6, 38
Federal Communications Commission
(FCC) 200, 225
Federal Signal 217
Feeney, S.A. 19
Fei, X. 7
Feinberg, G. 137
Fernandez, J. & A. 227
Few, R. 96
Finch, C. 204
Firestine, T. 17
Fischetti, T.R. 87, 89, 100, 186
Fleury, A.M. 171
flexibility 5, 39, 167
flooding 183
and hurricanes 186–7
and precipitation 93–5
transit shutdowns and recovery
192–3
Florida Governor’s Action Team on
Energy and Climate Change 131
Forman, R.T.T. 9, 166, 167
fossil fuel
consumption 74
emissions 76–7
see also combustion
Fothergill, A. 203
Fox News and Associated Press 201
Freemark, Y. 147
freight 13, 29, 36, 219, 220
  freight traffic 229–30
  funding for security 238
fuel economy 77, 82, 85, 108
fuel in emergencies 205
Gardner, A. 175
Garr, E. 15–16
gas station locations 140–41
Gerrard, M.R. 161
Gibbs, D. 19
Gillis, J. 86
Glaspalt 150
Global Footprint Network (GFN) 106, 107–8
Goldberg, D. 148
Goodman, J.D. 146
Gordon, P. 225
Gorman, S.P. 7, 225
government initiatives 130–33, 162, 233–40
Grava, S. 41
Graybeal, B. 114
green calculators 106–11
Greene, D.L. 111, 113
greenhouse gases (GHG)
  alternative travel and energy use 144–5
  carbon dioxide (CO₂) equivalents 74, 75, 79–80, 84
  and CO₂ emissions 74–5
  and EISs 160–61
  emission measurement and controls 82
  emissions by vehicle type 84–5
  and energy use 82–3
  geographic variations in emissions 79–82
  innovations for reduction 135–7
  inventories 133, 137
  and land use 10–11
  and transportation 75–6
Gruber, P.W. 139
Grubesic, T.H. 5
Grunbaum, D. 168
Grynbaum, M.M. 197, 219
Guha-Sapir, D. 183
Guizzo, E. 229
habitat fragmentation 166, 168
Hadas, Y. 7, 22
Hallett, J.G. 171
Hamdan, S. 9
Hamish, D. 104
Harding, G.W. 88
Harris County Office of Homeland Security and Emergency Management 201
Hay, J.E. 114
heat 86, 88–9
  adaptation measures 113–14, 117
  impact on transportation 89–92
  measures 89
  natural hazard 183
  temperature patterns and trends 87, 89
vegetation and heat reduction 170
heavy rail transit 13, 29, 41–2
  concentration 49–51, 67–8, 219
  density 55–7, 62
  infrastructure 42, 43
  passenger trips 44
  population served 45–8, 51
  stations and miles of track 51–4
  travel activity and density 61–2
  trips and miles of travel 57, 58, 59–60, 64–6
Henry Hub 8
Herrmann, M. 174
highway bridge failures 197–200
Hilbert, M. 227
Hoegh-Guldberg, H. 99
Holland, M.R. 1
Holme, P. 5
Holzer, T.L. 188
Horton, R. 99
Howitt, A.M. 218, 236
Huizenga, C. 1
Hukoomi, Qatar Government 174
Hummer, J.E. 148
Huppert, D.D. 99
hurricanes
  characteristics of 186–7
  and global climate change 92–3
  measurement 186
  road closures and recovery 189–91
transit shutdowns and recovery 192–3
hurricanes, named
  Hurricane Alicia 195, 202
  Hurricane Floyd 190–91, 202–3
  Hurricane Ike 8, 191, 193, 195, 201
  Hurricane Irene 191, 192–3, 194, 201–2, 205
  Hurricane Katrina 94, 185, 191, 195, 202, 204, 205–6, 239
  Hurricane Rita 8, 185, 191, 201, 202, 208
hydrogen 139, 140–41
ICANN 226
ice melt see rapid ice melt
ICF International 102, 103
ICLEI see Local Governments for Sustainability
idling 85, 109, 134, 136, 207
Infill, R.A. 171
infill transport 36–7
information technology 225–9, 241, 251–2
Infrastructure Protection Program (IPP) 236–9
Transit Security Grant Program (TGSP) 236–9
INRIX, Inc 13, 33–4, 219
interdependencies 2, 8, 219–21, 251–2
Intergovernmental Panel on Climate Change (IPCC) 82, 86, 87, 89, 93, 95, 112, 131, 163
international policies 130–31
International Snowmobile Manufacturers Association (ISMA) 175, 176
International Strategy for Disaster Reduction (ISDR) 184–5
Jacob, K.H. 102, 104, 105
Jacob, T. 95
Jenkins, B.M. 221, 222–3, 233, 241
Jones, E. 111
Jones, P. 89
Kahn Ribeiro, S. 71, 88, 138
Kansky, K.J. 7
Karl, T.R. 72, 87, 91, 92, 114
Kateman, B. 151
Kendra, J. 204
Khullar, M. 150
Kifer, K. 146
Kim, S.H. 7
Kimmelman, M. 147
King County, WA 135–6
kinks see buckles and bends
Kintsch, J. 169, 171
Kirshen, P. 94
Kish, A. 90
Klinenberg, E. 232
Kluger, B.L. 194
Kneebone, E. 15–16
Knutson, T.R. 86, 93, 187
Koscher, K. 228
Krebs, V.E. 4
Krizek, K.J. 7, 37
LaFree, G. 218
Lai, Y.-C. 5, 6
land consumption 9–10
land use 7, 9–11, 16, 71, 73, 98, 112, 114, 116–17, 130–33, 163–4, 250
lane miles 31–2
latency effect 82
Layzer, J.A. 175, 176
Leiserowitz, A. 137
Lemke, P. 104–5
Lentz, K.M. 99
Leung, M. 218, 234
Levinson, D.M. 7, 37
cycle
  bikes 20
electric vehicles 20, 21
greenhouse gases 145
transportation general 75, 165, 228
life cycle analysis/assessment (LCA) 138, 144, 251, 252
light rail transit 29, 42
concentration 49, 50–51, 67
density 56, 57, 62
infrastructure 42, 43
land area 47
passenger trips 44
population served 45–7
stations and miles of track 51–2, 53, 54
trips and miles of travel 58–60, 62, 65–6, 68
Lindseth, G. 135
liquefied petroleum gases (LPG) 138, 140–41
Litman, T. 10, 94, 201, 202, 204
Local Governments for Sustainability (ICLEI) 112, 135
local planning 134–7
Loe, S. 171
Lopez, P. 227
Los Angeles County District Attorney’s Office 229
The Louis Berger Group, Inc. 164
low lying land 96–9
Lowrey, A. 8
Lu, H. 150
Luther, L. 205
Lynch, K. 7
Maantay, J.A. 101
MacArthur Foundation 208
MacDonald, L. 175
Madrigano, J. 203
Makler, J. 218, 236
Markoff, J. 228
Maroko, A. 101
Marshall, N.A. 113
Masera, M. 5
Massachusetts Department of Transportation (MassDOT) 166, 168–9, 170–71
Massachusetts Executive Office of Energy and Environmental Affairs and the Adaptation Advisory Committee 115
Massachusetts versus EPA 549 US 497 137
Masters, G.M. 72, 137, 138
Matthews, H.D. 82, 131
McAfee 228
McCann, B. 148
McCarl, B.A. 2
McCarthy, J.E. 205–6
McGranahan, G. 96
McMillan, R. 228
measurement systems 105–11
Mech, S.G. 171
Mehrotra, S. 71, 114
Meleagrou-Hitchens, A. 217
Melosi, M.V. 149–50, 159
Methyl Tertiary Butyl Ether (MTBE) 164–5
metropolitan statistical areas (MSAs) 12–13, 34, 41, 45
Metropolitan Transportation Authority (MTA) 34, 48, 91–2, 94, 104, 107, 115, 135, 137, 193, 197, 219, 233
Transit Effect Calculator 109
Meyer, M.D. 72, 88, 111, 114, 206–7
middle level of command 6
Milczarski, W. 146
Miller, M. 227
Min, S.K. 93
mitigation, for climate change 72, 111–13
mobile source air toxics (MSAT) 161
Modified Mercalli Intensity Scale 185
Moser, S.C. 112
Motter, A.E. 5, 6
multi-use paths 19–20
Murakami, J. 11, 83
Murray, A.T. 5
Murray-Tuite, P.M. 7
Myhrvold, C.L. 93–4
Nagurney, A. 7, 37
National Coalition of Complete Streets 148
National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling 232
National Consortium for the Study of Terrorism and the Responses to Terrorism see START
National Environmental Policy Act (NEPA) 137, 159–62, 175, 177, 205–6
National Highway System (NHS) 31, 32, 103, 198
National Highway Traffic Safety Administration (NHTSA) 198
National Infrastructure Advisory Council 206
National Oceanic and Atmospheric Administration (NOAA) 87, 89, 94, 99, 185, 186, 190–91, 194, 202
National Petroleum News (NPN) 140–41
National Preparedness Report 225
National Research Council (NRC) 10, 29, 31, 88, 92, 112, 186, 252
National Transit Database (NTD) see US DOT, FTA, NTD
National Transportation Safety Board (NTSB) 193, 196, 198–200, 207
National Weather Service 89, 194
natural hazards 17
categorization 183
debris accumulation 194–6
impacts on transportation 187–9
incidence and vulnerability 184–5
road closures and recovery 189–91
road and rail shutdowns 193–4
significant 183
transit shutdowns and recovery 192–3
types of 185–7
see also earthquakes; flooding; hurricanes; tornadoes
Natural Resources Canada 104
network components
boundaries 6
connectivity 2–3, 7, 9–22
edges 4–5, 7
links 6, 7, 38, 39
nodes 4–7, 38–9
structure 5–6
vertices 4–7, 38–9
network-related concepts
adaptability 5, 6, 39
centrality 4, 38–9, 167
betweenness, closeness and degree 4, 39, 167
concentration 5, 8–9, 39
and environmental corridors 166–8
flexibility 5, 39, 167
remoteness 5, 39
networks 3
environmental 159–77
and equity 13–15
interdependencies 249–52
rail 29–30, 37–68
road 29–37
street 21
theory 4–6
and transport, environment and security 6–8
transportation and climate change 116–17
Neuman, W. 233
New York City 79–81, 84–5, 115, 116, 137, 146, 149
New York City Department of Transportation 151
New York City Office of the Mayor 19
New York City Panel on Climate Change (NPCC) 87, 94
Newman, A. 21, 168
Newman, M.E.J. 4, 5, 7, 38
Nicholls, R.J. 95, 101
Niemeier, D. 111
Niles, J. 37
non-interstate system roads 32, 103
North American Electric Reliability Corporation (NERC) 226
Noss, R.F. 171
off-road vehicles 32, 174
Office of the Chief Investigator 91
Ohio Department of Public Safety 176
Onishi, N. 116
outliers 21–2
Overpeck, J.T. 101
Ozbay, K. 190
Pacala, S. 111, 113
Padgett, J.P. 110, 111
Pall, P. 93
Parfomak, P.W. 8
Paterson, R.G. 135
pathways, multi-use 19–20
Pattanayak, S.K. 2
Patton, P. 140
Paul, F. 95
pedestrians 19–20
Peirce, N. 18, 147, 148
Perl, A. 71
Perrow, C. 8, 226
Perry, T. 195, 208
petroleum 76–7
and CO2 emissions 78–9
use in transportation 77–8
vehicular consumption 84
Pew Center for Climate and Energy Solutions 131
Pew Center on Global Climate Change 108, 132–4
Index

Pew Research Center for the People and the Press 216
Philadelphia Water Department 149
Pielke, R.A., Jr. 187
Pollack, A.W. 188, 189
population density 45
land use and transportation 11
and poverty 15, 16
and rail transit 40–41, 45–7, 49–51, 55–7, 61–7
rate of growth in urban areas 12–13
and sea level rise 96, 99–102
and terrorism 220
and vehicular use 35–6, 83
Post, Buckley, Schuh & Jernigan, Inc. 202–3
Poulsen, K. 226
poverty 13–15, 16
precipitation 85–8, 93–5, 114–16, 183, 186, 197, 207
Preston, B. 204
PricewaterhouseCoopers (PwC) 219–21, 229
Pucher, J. 20, 21
Puentes, R. 35
Qiang, Q. 7, 37
Rahmstorf, S. 99
rail transit 29–30, 66–8
cases of wildlife protection 173
connectivity to 36–7, 38
and cyber attacks 230–33
definitions 41–2
infrastructure and travel trends 42–4
land area characteristics 47–51
and population 40–41, 45–7, 49–51, 55–7, 61–7
rail failures 196–7
shutdowns and recovery 192–4
size characteristics 44–5
tracks and stations 51–6
travel activity 56–66
see also commuter rail transit; light rail transit;

Railpage.com.au 91
Randolph, J. 72, 137, 138
rapid ice melt 87–8, 95, 104–5, 183
rare earths 21, 139
Reed, J. 147
Rees, W. 106
regenerative breaking 135
Regional Greenhouse Gas Initiative (RGGI) 131
Reid, K. 141
remoteness concept 5, 39
renewable energy 3, 78, 138–9, 249, 250
resilience 3, 9, 78, 113, 130, 138–9, 206–8
Resources for the Future 131
response mechanisms to terrorist attacks 240–41
Restrepo, C.E. 8, 220
Reuters 8
Richman, C. 97
Richter Scale 185, 188
Rinaldi, S.M. 8
Risk Management Solutions, Inc. (RMS) 218
Roach, J. 171
roadways 29–30
cases of wildlife protection 171–3
closures and recovery 189–91, 193–4
concentration 33–5
connectivity 30–33
and cyber attacks 228–30
deconstruction 17–18, 147
infill transport 36–7
system use trends 35–6
terrorist attacks on 224–5
see congestion
Robbins, J. 174
Roberts, H.H. 99
Rockwell, M. 232
Rodrique, J-P. 6–7, 10, 37
Romero-Lankao, P. 12
Rosenberg, D.K. 171
Rosenzweig, C. 133
rural areas
connectivity 16–17
emergency response times 203
ownership of roads 32
share of VMT 35–6
Rynne, S. 148
Saad, L. 217
Sachs, J.P. 93–4
safety of humans and wildlife 168–9
Saffir-Simpson Hurricane Wind Scale 186
Saha, D. 135
Salter, R. 150
San Francisco Bay Conservation and Development Commission 98–9, 101, 102
Sanger, D.E. 8
Santos, F. 37
Savage, R.P. 195, 202
Savitch, H.V. 9, 220, 249
Schmidt, N. 72, 88
Schott, T. 186
Schrank, D. 33, 219
Schwartz, J. 195
ScienceDaily 166, 171
sea level rise 87–8, 95
adaptation measures 114–16
estimates of 95–6
impact by city 98–9
impact by coastal areas 99–102
impact by state 96–8
impact on transportation 102–4
populations vulnerable to 96
security 1–3, 249–52
avoiding conflicts with 18–19
institutional mechanisms for 233–41
and networks 6–7
Sen, P. 7
sensor systems 251
sensors 151, 228, 230
Sétra 174
Severson, K. 201
Shannon, E. 15, 22
Sherman, M. 190
Shevory, K. 19
Shrobe, H. 227
Simberloff, D. 171
Simon, H.A. 6
Simonoff, J.S. 8, 224, 241
Slay, J. 227
Slovic, P. 110
smart growth 130, 132, 134
snowmobiles 19, 175–6, 177
social justice see equity
Socolow, R. 111, 113
solar energy 3
Solomon, S. 82, 86, 89, 93, 95
Southworth, M. 145
Sperling, D. 71, 73
Speth, J.G. 249
Spiegelhalter, D. 87
sprawl 15–17, 203
START 217–18, 221–2
state legislation 111, 131–3
State of Maine 176
State of Texas 191, 193, 195
state planning 134
Stefanini, A. 5
Stoller, G. 221
Stone, B. 89, 114
storms 87, 88, 94–5, 183, 186–7, 193
see also flooding; hurricanes; tornadoes;
stormwater control 148–9, 196–7, 250
Stormwater Management and Road Tunnel (SMART) 115, 149
Strait of Hormuz 8–9
streets 10, 17, 30, 32, 33, 147–51, 250
adaptable networks 21
as communication conduits 151
“complete streets” 147–8
deconstructing 147
as electric power generators 150–51
for the future 151
greening 148
as pedestrian thoroughfares 148
for stormwater control 148–9
for waste cleaning 149–50
and waste recycling 150
Suarez, P. 102
Sutcliffe, O.L. 171
Sutley, N.H. 161
Symantec Corporation 225
Tavernise, S. 15, 16
Taylor, B.D. 223
Taylor, M.A.P. 5
Tebaldi, C. 96
technologies 73–4, 130, 134, 137–42,
150, 152, 176, 207–8, 225–9, 251–2
see also alternative fuels; information technology
Teh, C.S. 7
Telegeography 227
temperature patterns and trends 89
terrorism 17, 240, 252
attacks on roads and surface transportation vehicles 221, 224–5, 229
location of attacks 222–3
magnitude of concern 216–17
and public transportation 221–2
recovery from 223–4
reducing consequences 223
transportation vulnerability 218–21, 252
trends 217–18
see also cyber attacks
Tewksbury, J.J. 171
Texas Transportation Institute 33
Thomas, C.D. 171
Titus, J.G. 97, 98
Tol, R.S.J. 115
Toly, N.J. 135
Tomer, A. 35
tornadoes 183, 195, 202, 239
Toronto City Planning 149, 151
transit 37–68
defined 41
see also commuter rail; light rail; heavy rail
transport, as network 3–9
Transportation for America and the Surface Transportation Policy Partnership 146
Transportation Research Board (TRB) 10–11, 71, 73, 75, 85, 88, 112, 191, 193, 229–30
transportation vulnerability
computerized controls in cars 228
and cyber connectivity 226–8
to flooding 104
to increased precipitation 94
network 5–6
public transport 221–2, 230
to terrorism 218–21
Trenberth, K.E. 93
Trowbridge, M.J. 17, 203
tsunamis 183
Asian 186
characteristics of 186
Japanese 3, 20–21, 116, 186
Tuckel, P. 146

UN-Habitat 96
urban areas
congestion in 33–5, 219
pavements 92
rail systems 37–68, 193
rankings 107
rapidly growing 12–13
roadway mileage 32–3
and sea level rise 96
share of VMT 35–6
Urbina, E. 8, 202, 208
Urbina, I. 224
US Army Corps of Engineers (USACE) 96, 104, 105, 115
US Census Bureau (also US Bureau of the Census) 12, 14, 41, 45, 48, 63, 97, 99–101, 144
US Climate Change Science Program (USCCSP) 88, 102
US Conference of Mayors (USCOM) 135, 136
US Congress, House of Representatives 239
US Department of Energy (US DOE) 140, 141, 205
Alternative Fuels and Advanced Vehicles Data Center 141–2, 144
Energy Information Administration (EIA) 35, 36, 71, 74, 76–9, 85, 138–41
National Energy Research Laboratory (NERL) 140
National Renewable Energy Laboratory 150
US Department of Homeland Security (US DHS) 235, 239
Federal Emergency Management Administration (FEMA) 105, 184, 236, 239
grant programs 236
National Infrastructure Protection Plan (NIPP) 234–5
Transit Security Grant Program 236–9
Transportation Security Administration (TSA) 230–31, 238
US Department of Housing and Urban Development (HUD) 136
US Department of the Interior, National Park Service (US DOI, NPS) 175, 176
US Department of Transportation (US DOT) 102, 160, 228, 234
Center for Climate Change and Environmental Forecasting 103
Federal Highway Administration (FHWA) 10, 12–13, 29, 30–33, 35, 36, 82, 146, 150, 160–64, 168, 171, 173, 184, 196, 198, 219, 239–40
Federal Motor Carrier Safety Administration 90
Federal Railroad Administration (FRA) 91, 241
Federal Transit Administration (FTA) 30, 37, 83, 90, 92, 94, 113–16, 160, 162, 218, 223, 238, 239
National Transit Database (NTD) 16, 29, 34, 40–48, 52, 55–8, 60, 62, 63, 66, 87, 146, 184
funding programs 239–40
Research and Innovative Technology Administration (RITA) 29, 31
Bureau of Transportation Statistics (BTS) 31, 41, 76
Volpe Center 90, 91, 233
US Environmental Protection Agency (US EPA) 1, 14, 15, 71, 74–7, 80, 84, 85, 115, 116, 134, 136, 137, 140, 149, 161–5, 195, 205
Household Emissions calculator 108
Integrated Risk Information System (IRIS) 161
State Climate and Energy Program 134, 135
US Executive Office of the President 164
US Federal Government funding 235–6
programs 233–4
US Forest Service 175
US Geological Survey (USGS) 185, 188, 192
US House of Representatives 131
US White House 112
US White House, Office of the Press Secretary 161, 162
vanpools 37, 42
Vasquez, E. 91
vehicle miles of travel (VMT) 10–11
trends 16, 35–6, 44, 83–4
in urban areas 12–13, 32–3
vehicles
accidents 17, 146, 168–9, 198, 203
adaptation 113
alternative vehicles 137–43
conventional 228–9
driverless 229
electric 3, 20–21, 139–40, 150, 208
emergency 3, 17, 200, 202, 204, 228
fuel charging stations 142
fuel use 85
GHG emissions by type 84–5
integrity of 92
natural hazards 201–2
off-road 32, 174
planning programs incorporating 132–6
streets 140
surface transportation, attacks on 224–5
technology see technology
terrorist attacks on see terrorism
types and characteristics 36–7, 159
use, and climate change 77, 80–84
Venner, M. 171
ventilation
infrastructure, vulnerability to flooding 104
integrity, computerized control 230
points 251
Vermeer, M. 99
Vixie, P. 226
vulnerability
to natural hazards 184–5, 192–3
of wildlife to road collisions 168
see also transportation vulnerability
WABC Eyewitness News 232
Wachs, M. 15
Wackernagel, M. 106
Wald, M.L. 171, 232
Walk Score 107, 108
walking 11, 18, 38, 145–6
calculators 107, 109
energy usage and emissions 145
New York City 80
promotion 136
Wang, M. 138
Washington Post 192
Wasserman, D. 4, 6, 38

waste
waste cleaning, streets for 149–50
waste recycling and streets 150

water
attacks on systems 228–9
discharges in emergencies 205–6
inland flooding 186–7
quality 165
stormwater control 148–9, 196–7, 250
and wildlife habitat 170–71, 173
see also precipitation; sea level rise
weather related data 114–15
Webster, P.J. 187
Weiss, J.L. 101
Wells, J. 15, 22
Western Climate Initiative 131
Wheeler, S.M. 134
White, R. 37
Wigley, T.M.L. 86

Wikimedia & Wikimedia Commons 174
Wikipedia 92, 224
wildlife 168–74
wildlife corridors see ecological corridors
Wilson, C. 225, 227
Wilson, S.G. 87, 99, 100, 186
Winslow, F.E. 233, 241
Wolshon, B. 8, 202, 204, 208
Woo, G. 183
Woodyard, C. 150–51
Wouter Botzen, W.J. 101
Wright, B. 204
Wright, K.M. 103
Yacobucci, B.D. 138
Yashinsky, M. 188, 190, 192
Yazici, M.A. 190
Young, P. 35
Zoli, T. 7, 208