(A) hyd I

(2) Fd + (1) NAD+ + (2) H2 ⬄ (2) Fd⁻ + (1) NADH + (3) *H*⁺

(2) Fd + (1) NAD+ + (2) H2 (1) hydI[alone] ⬄ (1) hydI[conj]

(1) hydI[conj] ⬄ (2) Fd + (1) NAD+ + (2) H2 (1) hydI[alone]

(1) hydI[conj] ⬄ (2) Fd⁻ + (1) NADH + (3) *H*⁺ + (1) hydI[alone]

(2) Fd⁻ + (1) NADH + (3) *H*⁺ + (1) hydI[alone] ⬄ (1) hydI[conj]

(B) hyd II

(1) H2 + (1) NADP+ ⬄ (1) H+ + (1) NADPH

(1) H2 + (1) NADP+ + (1) hydII[alone] ⬄ (1) hydII[conj]

(1) hydII[conj] ⬄ (1) H2 + (1) NADP+ + (1) hydII[alone]

(1) hydII[conj] ⬄ (1) H+ + (1) NADPH + (1) hydII[alone]

(1) H+ + (1) NADPH + (1) hydII[alone] ⬄ (1) hydII[conj]

(C) fdhA

(2) For + (2) Fd + (1) NAD+ ⬄ (2) CO2 + (2) Fd- + (1) NADH + (1) H+

(2) For + (2) Fd + (1) NAD+ + (1) fdhA[alone] ⬄ (1) fdhA[conj]

(1) fdhA[conj] ⬄ (2) For + (2) Fd + (1) NAD+ + (1) fdhA[alone]

(1) fdhA[conj] ⬄ (2) CO2 + (2) Fd- + (1) NADH + (1) H++ (1) fdhA[alone]

(2) CO2 + (2) Fd- + (1) NADH + (1) H++ (1) fdhA[alone] ⬄ (1) fdhA[conj]

(D) fdhF2

(1) H2 + (1) CO2 ⬄ (1) H+ + (1) For

(1) H2 + (1) CO2 + (1) fdhF2[alone] ⬄ (1) fdhF2[conj]

(1) fdhF2[conj] ⬄ (1) H2 + (1) CO2 + (1) fdhF2[alone]

(1) fdhF2[conj] ⬄ (1) H+ + (1) For + (1) fdhF2[alone]

(1) H+ + (1) For + (1) fdhF2[alone] ⬄ (1) fdhF2[conj]

(E) fhs

(1) THF + (1) ATP + (1) For ⬄ (1) 10 FTHF + (1) ADP + (1) Pi

(1) THF + (1) ATP + (1) For + (1) fhs[alone] ⬄ (1) fhs[conj]

(1) fhs[conj] ⬄ (1) THF + (1) ATP + (1) For + (1) fhs[alone]

(1) fhs[conj] ⬄ (1) 10 FTHF + (1) ADP + (1) Pi + (1) fhs[alone]

(1) 10 FTHF + (1) ADP + (1) Pi + (1) fhs[alone] ⬄ (1) fhs[conj]

(F) folD

(1) 10 FTHF + (1) H+ + (1) NADPH ⬄ (1) MeTHF + (1) H2O + (1) NADP+

(1) 10 FTHF + (1) H+ + (1) NADPH + (1) folD[alone] ⬄ (1) folD[conj]

(1) folD[conj] ⬄ (1) 10 FTHF + (1) H+ + (1) NADPH + (1) folD[alone]

(1) folD[conj] ⬄ (1) MeTHF + (1) H2O + (1) NADP+ + (1) folD[alone]

(1) MeTHF + (1) H2O + (1) NADP+ + (1) folD[alone] = (1) folD[conj]

(G) metF

(1) MeTHF + (1) NADH + (1) H+ ⬄ (1) 5MeTHF + (1) NAD+

(1) MeTHF + (1) NADH + (1) H+ + (1) metF[alone] ⬄ (1) metF[conj]

(1) metF[conj] ⬄ (1) MeTHF + (1) NADH + (1) H+ + (1) metF[alone]

(1) metF[conj] ⬄ (1) 5MeTHF + (1) NAD+ + (1) metF[alone]

(1) 5MeTHF + (1) NAD+ + (1) metF[alone] ⬄ (1) metF[conj]

(I) acsE

(1) 5MeTHF + (1) [corrinoid] + (1) H+ ⬄ (1) Me-corrinoid] + (1) THF

(1) 5MeTHF + (1) [corrinoid] + (1) H+ + (1) acsE[alone] ⬄ (1) acsE[conj]

(1) acsE[conj] ⬄ (1) 5MeTHF + (1) [corrinoid] + (1) H+ + (1) acsE[alone]

(1) acsE[conj] ⬄ (1) Me-[corrinoid] + (1) THF + (1) acsE[alone]

(1) Me-[corrinoid] + (1) THF + (1) acsE[alone] ⬄ (1) acsE[conj]

(J) codh

(1) CO2 + (2) Fd- + (1) H+ + (1) Me-[corrinoid] + (1) CoA ⬄ (2) Fd + (1) H2O + (1) [corrinoid] + (1) AcCoA

(1) CO2 + (2) Fd- + (1) H+ + (1) Me-[corrinoid] + (1) CoA + (1) codh[alone] ⬄ (1) codh[conj]

(1) codh[conj] ⬄ (1) CO2 + (2) Fd- + (1) H+ + (1) Me-[corrinoid] + (1) CoA + (1) codh[alone]

(1) codh[conj] ⬄ (2) Fd + (1) H2O + (1) [corrinoid] + (1) AcCoA + (1) codh[alone]

(2) Fd + (1) H2O + (1) [corrinoid] + (1) AcCoA + (1) codh[alone] ⬄ (1) codh[conj]

(k) pta

(1) AcCoA + (1) Pi ⬄ (1) CoA + (1) ACTP

(1) AcCoA + (1) Pi + (1) pta[alone] ⬄ (1) pta[conj]

(1) pta[conj] ⬄ (1) AcCoA + (1) Pi + (1) pta[alone]

(1) pta[conj] ⬄ (1) CoA + (1) ACTP + (1) pta[alone]

(1) CoA + (1) ACTP + (1) pta[alone] ⬄ (1) pta[conj]

(l) ackA

(1) ACTP + (1) ADP ⬄ (1) Ac + (1) ATP

(1) ACTP + (1) ADP + (1) ackA[alone] ⬄ (1) ackA[conj]

(1) ackA[conj] ⬄ (1) ACTP + (1) ADP + (1) ackA[alone]

(1) ackA[conj] ⬄(1) Ac + (1) ATP + (1) ackA[alone]

(1) Ac + (1) ATP + (1) ackA[alone] ⬄ (1) ackA[conj]

(m) rnf

(2) Fd- + (1) NAD+ + (3) H+ ⬄ (2) Fd + (1) NADH + (2) H+ [out]

(2) Fd- + (1) NAD+ + (3) H+ + (1) rnf[alone] ⬄ (1) rnf[conj]

(1) rnf[conj] ⬄ (2) Fd- + (1) NAD+ + (3) H+ + (1) rnf[alone]

(1) rnf[conj] ⬄ (2) Fd + (1) NADH + (2) H+ [out] + (1) rnf[alone]

(2) Fd + (1) NADH + (2) H+ [out] + (1) rnf[alone] ⬄ (1) rnf[conj]

(n) atpF

(1) ADP + (5) H+[out] + (1) Pi ⬄ (1) ATP + (4) H+ + (1) H2O

(1) ADP + (5) H+[out] + (1) Pi + (1) atpF[alone] ⬄ (1) atpF[conj]

(1) atpF[conj] ⬄ (1) ADP + (5) H+[out] + (1) Pi + (1) atpF[alone]

(1) atpF[conj] ⬄ (1) ATP + (4) H+ + (1) H2O + (1) atpF[alone]

(1) ATP + (4) H+ + (1) H2O + (1) atpF[alone] ⬄ (1) atpF[conj]

(o) biomass

(0.16) AcCoa + (0.24) ATP + (2) NADH + (2) H+ ⬄ (0.16) BM + (0.24) ADP + (2) NAD+ + (0.16) CoA

(2) AcCoa + (3) ATP + (2) NADH + (2) H+ ⬄ (1) BM + (3) ADP + (2) NAD+ + (2) CoA

(2) AcCoa + (3) ATP + (2) NADH + (2) H+ + biomass[alone] ⬄ biomass[conj]

biomass[conj] ⬄ (2) AcCoa + (3) ATP + (2) NADH + (2) H+ + biomass[alone]

biomass[conj] ⬄ (1) BM + (3) ADP + (2) NAD+ + (2) CoA+ biomass[alone]

(1) BM + (3) ADP + (2) NAD+ + (2) CoA+ biomass[alone] ⬄ biomass[conj]

(p) H2ex

(1) H2[out] ⬄ (1) H2

(1) H2[out] + (1) H2ex[alone] ⬄ (1) H2ex[conj]

(1) H2ex[conj] ⬄ (1) H2[out] + (1) H2ex[alone]

(1) H2ex[conj] ⬄ (1) H2 + (1) H2ex[alone]

(1) H2 + (1) H2ex[alone] ⬄ (1) H2ex[conj]

(q) CO2ex

(1) CO2[out] ⬄ Co2

(1) CO2[out] + (1) CO2ex[alone] ⬄ (1) CO2ex[conj]

(1) CO2ex[conj] ⬄ (1) CO2[out] + (1) CO2ex[alone]

(1) CO2ex[conj] ⬄ Co2 + (1) CO2ex[alone]

Co2 + (1) CO2ex[alone] ⬄ (1) CO2ex[conj]

(3) H2 + (1) CO2 + (2) Fd + (1) NAD+ ⬄ (2) Fd- + NADH + (4) H+ + (1) for

(3) H2 + (1) CO2 + (2) Fd + (1) NAD+ + (1) fdhA[alone] ⬄ (1) fdhA[conj]

(1) fdhA[conj] ⬄ (3) H2 + (1) CO2 + (2) Fd + (1) NAD+ + (1) fdhA[alone]

(1) fdhA[conj] ⬄ (2) Fd- + NADH + (4) H+ + (1) for + (1) fdhA[alone]

(2) Fd- + NADH + (4) H+ + (1) for + (1) fdhA[alone] ⬄ (1) fdhA[conj]

(1) AcCoa + (1) Pi ⬄ (1) CoA + ACTP

(1) AcCoa + (1) Pi ⬄ (1) pta[conj]

(1) pta[conj] ⬄ (1) AcCoa + (1) Pi

(1) pta[conj] ⬄ (1) CoA + (1) ACTP

(1) CoA + (1) ACTP ⬄ (1) pta[conj]

(1) ACTP + (1) ADP ⬄ (1) AC + (1) ATP

(1) ACTP + (1) ADP + (1) ackA[alone] ⬄ (1) ackA[conj]

(1) ackA[conj] ⬄(1) ACTP + (1) ADP + (1) ackA[alone]

(1) ackA[conj] ⬄ (1) AC + (1) ATP + (1) ackA[alone]

(1) AC + (1) ATP + (1) ackA[alone] ⬄ (1) ackA[conj]

(1) AcCoA + (1) Pi + (1) ADP + (2) NADH + 2 H+ ⬄ (1) ATP + (1) CoA + (2) NAD+ + (1) preBM + (1) Ac

(1) AcCoA + (1) Pi + (1) ADP + (2) NADH + 2 H+ + (1) biomass[alone] ⬄ (1) biomass[conj]

(1) biomass[conj] ⬄ (1) AcCoA + (1) Pi + (1) ADP + (2) NADH + 2 H+ + (1) biomass[alone]

(1) biomass[conj] ⬄ (1) ATP + (1) CoA + (2) NAD+ + (1) preBM + (1) Ac + (1) biomass[alone]

(1) ATP + (1) CoA + (2) NAD+ + (1) preBM + (1) Ac + (1) biomass[alone] ⬄ (1) biomass[conj]